MARITIME REPORTER
AND
ENGINEERING NEWS

NAVIGATION & COMMUNICATIONS EQUIPMENT REVIEW
PAGE 22

Joan Turecamo

EMD-Powered 'Joan Turecamo' Delivered By Matton Shipyard
(SEE PAGE 12)

RTCM A Preview
(MI-E PAGE 6)

APRIL 15, 1981

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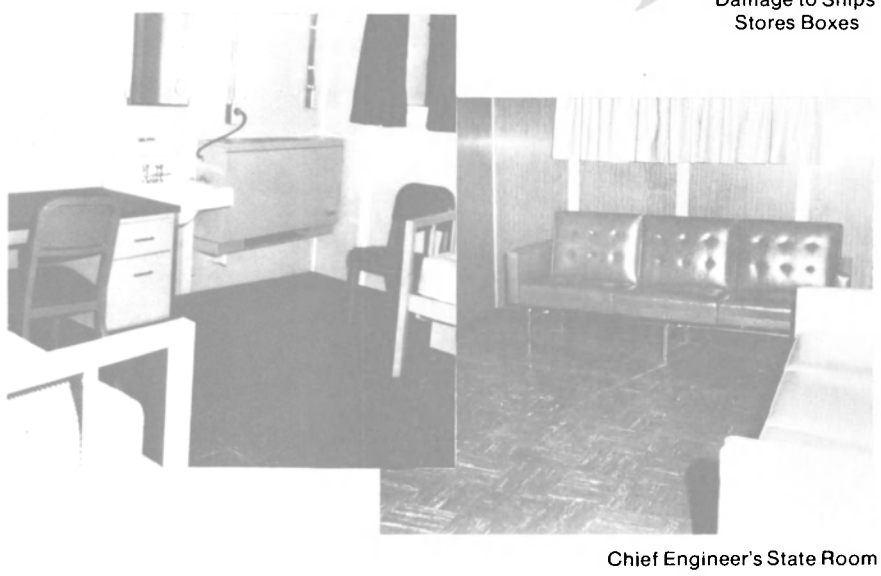
Damage to Ships' Stores Boxes

Crew's State Room



Chief Engineer's State Room

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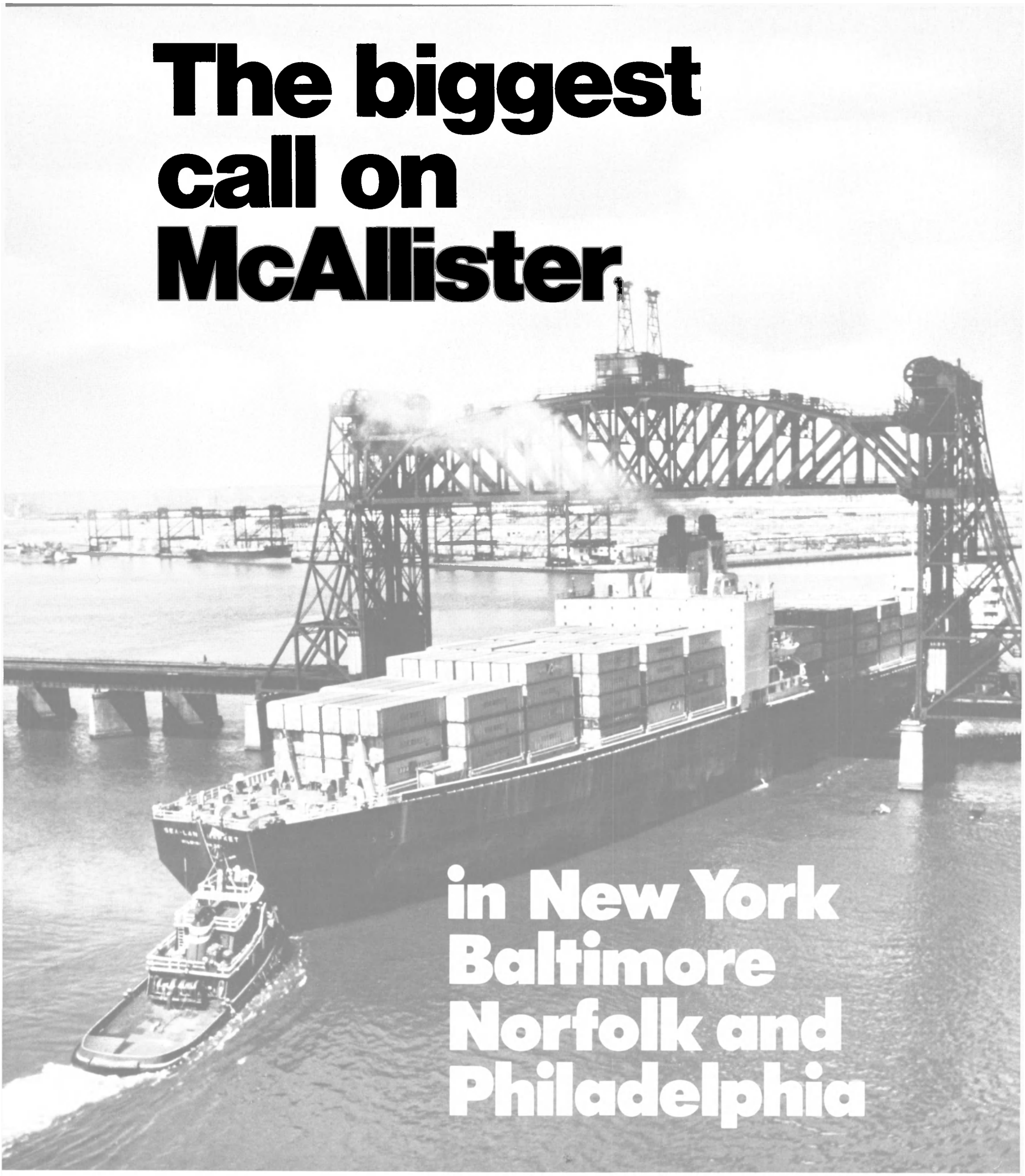

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Tidelands Limited IV Asks Title XI On Jackup Rig To Cost $33 Million

Tidelands Limited IV, Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of a nonself-propelled jackup drilling rig to be operated in the Gulf of Mexico.

Bethlehem Steel Corp.'s Sparrows Point, Md., yard has been proposed to build the rig, with delivery scheduled for May 1982. The requested guarantee is for $24,500,000, or approximately 75 percent of the $33,130,000 estimated cost of the rig.

United States Cruises Acquires Title To SS 'United States'

United States Cruises, Inc. (USCI), Seattle, Wash., has made the final $3-million payment for the purchase of the passenger ship United States, and received title to the vessel from the Commerce Department's Maritime Administration (MarAd). USCI presented MarAd with an irrevocable letter of credit for $3 million, and subsequently electronically transferred the funds from its Seattle bank to the United States government account. It also gave MarAd a check for $24,977.60 to cover all unpaid out-of-pocket expenses for the care of the ship through March 21.

The United States was built for United States Lines in 1952 by Newport News Shipbuilding and Dry Dock Company. It operated in trans-Atlantic service until it was laid up in Norfolk, Va., in 1969. It was purchased by MarAd in 1973 under the Passenger Ship Sales Act. The government invited bids for the sale of the ship four times over the years, but never received any considered responsive to the terms of its offerings. In September 1978, MarAd accepted an offer from USCI to buy the vessel for $5 million. The company proposed to refurbish the vessel to provide cruise service between Los Angeles/San Francisco and Hawaii, and among the Hawaiian Islands.

USCI previously paid deposits totaling $2 million toward the $5-million purchase price, and has been responsible for paying actual out-of-pocket costs for retaining the United States at its berth at Norfolk International Terminal.

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Improved Controllability Topic At Chesapeake Section Meeting

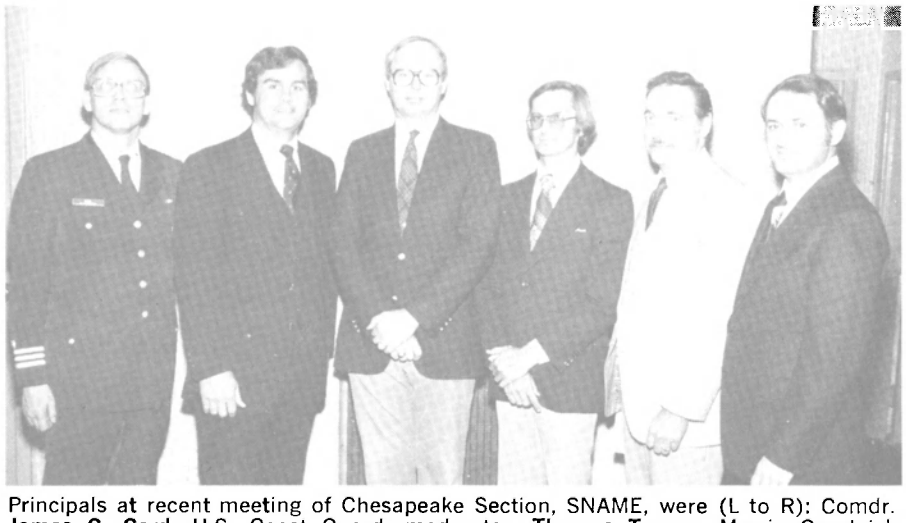
Members of the Chesapeake Section of The Society of Naval Architects and Marine Engineers met recently to hear the presentation of a paper titled "Evaluation of Concepts for Improved Controllability of Tank Vessels," by **Eugene Miller, Vladimir Ankudinov,** and **Thomas Ternes.** Both Mr. **Miller** and Dr. **Ankudinov** are with Hydronautics, Inc. of Laurel, Md., while Mr. **Ternes** is now with Morris Guralnick Associates of San Francisco, although at the time the work presented in the paper was accomplished he was also working for Hydronautics.

The paper was presented by Mr. **Miller** and Mr. **Ternes,** and is based on a study done by the authors for the Maritime Administration in which the reasons for tanker casualties involving collision, ramming and grounding, and concepts for improving controllability were evaluated. The U.S. Coast Guard casualty data bank was used as the source of information for the casualty analysis. The data for a five-year period (1971-1976) were reviewed, and cases where controllability played a major role were evaluated. Only casualties occurring in U.S. waters or involving U.S. vessels in foreign waters were contained in the Coast Guard's data bank; therefore, the study was limited to those cases.

Based on this review, it was determined that the major cause of tanker casualties involving collision, ramming, or grounding result from human error, followed by control problems in wind and current, inability to turn sharply enough, insufficient tug assistance, stopping, bank suction/sheer, steering/propulsion failure, control while slowing, and control while backing in that general order. Human error caused casualties were not considered further although it was acknowledged that, in many cases, improved vessel controllability could have mitigated the consequences of the human error. The types of controllability required to reduce the number and severity of these casualties were evaluated and categorized into such areas as the ability to maintain control of the vessel after losing one steering or propulsion unit, the ability to maintain steerageway while slowing down, and the ability to control heading while backing. Finally, the costs incurred as a result of the casualties were investigated to form a basis for the determination of the cost effectiveness of concepts for improving tanker controllability.

The second phase of the study involved the evaluation of various methods of increasing controllability through the use of a computer simulation of ships' maneuvering characteristics and a series of model tests. A single-screw, single-rudder, 84,000-deadweight-ton tanker with a steam propulsion plant of approximately 18,000 shp was selected as the baseline ship against which improvements in controllability would be measured. Five concepts for improved controllability were evaluated, i.e., twin propellers and rudders, increased astern power, maneuvering propulsion devices (tunnel thrusters, active rudder), high lift rudders (flapped rudders rotating cylinder rudder), and thrust vectoring devices including steering Kort nozzle and Kitchen rudder. The Kitchen rudder is a movable shroud that surrounds the propeller and is roughly analogous to the thrust reversers found on airliners.

The authors concluded that the use of the leading concepts investigated can be attractive from a shipowner's point of view. The moderator, Comdr. **James Card** of the U.S. Coast Guard, supported this conclusion and referred to the fact that improving vessel safety through approaches that offer financial advantages to owners is preferable to achieving the same goals through regulation.



Principals at recent meeting of Chesapeake Section, SNAME, were (L to R): Comdr. **James C. Card,** U.S. Coast Guard, moderator; **Thomas Ternes,** Morris Guralnick Associates, author; **Eugene Miller,** Hydronautics, Inc., author; **Vladimir Ankudinov,** Hydronautics, Inc., author; **John J. Nachtsheim,** National Academy of Sciences, president, SNAME; and **Robert J. Scott,** Gibbs & Cox, Inc., chairman, Chesapeake Section.

– A PREVIEW –

1981 RTCM ASSEMBLY

Memphis – April 27-29

The Radio Technical Commission for Marine Services (RTCM) will hold its 1981 Assembly Meeting April 27-29 at the Rivermont Holiday Inn in Memphis, Tenn. The American River Pilots Association is scheduled to participate.

The RTCM is an organization in which Government and industry cooperate in studies of existing and proposed systems of maritime telecommunications. They have a joint voice in offering solutions for the radio communication and electronic aids problems for ocean, lake and inland shipping, plus the fishing and offshore industries as well as the recreational boatmen.

The RTCM assembly symposium sessions are geared to the interests of a broad spectrum of communications people, ranging from management to operating personnel.

A variety of social events in connection with the Assembly have been scheduled commencing with a "Hello" reception on the evening of April 26. The feature social event will be a riverboat cruise and banquet scheduled for the evening of April 28. A completely separate ladies program also is planned.

Technical Sessions

A wide variety of technical papers will be presented during the Assembly. Among them are:

"The Future Global Maritime Distress and Safety System" by **G.F. Hempton,** Federal Communications Commission.

Synopsis — The Maritime Mobile Service is the oldest radio service and the maritime distress system goes back almost 70 years. Essentially our present distress and safety system is not much changed today. The IMCO Sub-Committee on Radiocommunications on October 3, 1980 approved the "Requirements of a Future Global Maritime Distress and Safety System." This new system is in support of the new Search and Rescue Plan, uses new technology, emphasizes ship-shore instead of ship-ship alerting and is expected to be fully operational in 1990 or shortly thereafter. Many details remain to be developed.

"Preparing for Data Communications on Marine Satellite/VHF Radio/Sitor" by **R.G. Bunce,** Maritel, Inc.

Synopsis—At present there is an explosion of development in data communications technology. The operators of these systems need to be aware of the special problems and unique advantages that data offers. This paper presents some of these. There is a tendency to adapt the land-developed data-communications equipment to shipboard use without appreciating the difference between a ship's radio room and an air-conditioned office. The home office is the final impact area. Bringing a wealth of real-time, accurate data to the home office is easy. Instituting management policies to extract the potential advantages from this data is more difficult. Some technical and non-technical aspects of this capability and its impact on the home office are presented.

"Channel Splitting Does Not Always Increase the Number of Usable Channels" by **Bob Eldridge,** chairman, Western Canada Telecommunications Council.

Synopsis — During the Special Preparatory Meeting of CCIR in 1978 there was a suggestion from the United Kingdom that 12.5 kHz channel spacing should be adopted for maritime VHF. There was a great deal of opposition, based primarily on the reduced range and reduced interference protection which would result from the use of a lower modulation index. Instead, when the debate on channel spacing was concluded, the SPM Report included a general statement that rather than concentrate on deriving more channels per MHz, research effort should be directed to making possible more messages per MHz in a given geographical area. It will be seen that under some circumstances channel splitting improves the situation and in other cases it worsens it.

"Satellite Telephone Switching in the 1980s" by **Carlton Smith,** national secretary, Marine Telephone Operators Association.

Synopsis — Marine telecommunications by radio enters a promising era during the decade ahead, thanks to the recent availability of geosynchronous earth-orbiting commercial satellites. Networking breakthroughs will be the most significant single advantage with the advent of space transponders available for marine facilities. During the 1970s MARISAT launched three orbiting satellites. Today a ship equipped with a MARISAT terminal can speak with another ship on the oceans of the world via a space telephone network. Similar switching circuits will soon connect participating marine telephone facilities across the nation. Rather than each individual vessel having to equip with precision and costly tracking mechanisms and satellite terminals, only the marine telco facilities will relay to and from the satellite, thereby saving time and expense with the economies of scale inherent in volume calling.

"Plotting of Ship's Track on Color CRT" by **G. Tomioka,** Japan Radio Co., Ltd.

Synopsis—This paper introduces the Color Plotter which indicates the ship's track overriding on the latitude and longitude lattice. The track is displayed in manually selected one color out of seven (green, red, blue, yellow, cian, magenta and white) colors. This feature is very convenient to distinguish the newest track from the past one, especially when the ship sails in the same area. Such a unit as the Color Plotter is very useful and attractive for those who are sailing but are not professional seamen. In this report, the construction, special features and also the experience of the author with this unit are described.

"Communication Problems on the Lower Mississippi River" by **E.F. Tims,** Louisiana State University.

Synopsis — Vessel traffic conditions on a major portion of the Lower Mississippi River are being studied by the Louisiana State University Center for Wetland Resources. The study objective is to determine appropriate techniques, systems, etc., to provide the safest and most efficient marine traffic flow in the study area. The study is being carried out under a grant from the National Sea Grant Program. Various aspects of the river, including its geography, traffic density, accident patterns, Navaids, and RF communications are being studied. The study team has conducted an extensive survey by questionnaires and interviews of those who use the local waterways. This paper presents major communications aspects of the study and the study team's conclusions.

"Canadian Preparations for World Administrative Radio Conference (WARC) 1982" by **E.D. DuCharme,** Government of Canada, Department of Communications.

Synopsis—The paper on Canadian preparations for the International Telecommunication Union World Administrative Radio Conference, Geneva 1982, will present the background of the development of Canadian proposals, some of the alternatives considered in various topic areas and the reasons for the choices made. Particular subject areas to be dealt with are: channeling of the HF maritime mobile radiotelephone service; use of the new shared bands at 4 and 8 MHz by the maritime mobile service; the future Global Maritime Distress and Safety System; navigational and meteorological warnings to ships by coast stations using narrow-band direct-printing telegraphy, and common frequencies in the MF bands for use by coast radiotelephone stations for communicating with ships of other nationalities.

"Clear Communications Could Curtail Collisions" by **J.S. Gardenier** and **D.T. Jones,** U.S. Coast Guard.

Synopsis — Five Coast Guard-sponsored research reports from 1977 through 1980 examined causal factors in collisions, ram-

mings and groundings. Mechanical failures account for only six percent of collisions and 12 percent of groundings and rammings. Human factors cause 80 to 85 percent of the accidents. In the collision cases alone, 85 to 90 percent is more accurate. The importance of the ship-handling problem fades into second place behind communications. There are two major types of communications failures. The first major type is failure to achieve a workable passing or overtaking agreement. The second major type of communication problem is a failure to make "security calls" before proceeding around blind bends. The problem involves some technical elements, but it is dominated by psychological, sociological and institutional components.

"Of Computers and Ships" by **C.S. Carney,** Nav-Com Incorporated.

Synopsis—Inexorably the course of computers and ships are converging and this comes as no surprise. The surprise, though subtle, is one of philosophy in the application of computers on ships. Processor and microprocessor controlled equipment are in abundance, but each specialized to the needs of an individual unit. Seldom are large, or even small, computers seen on ships which tie together diverse equipment into a common computerized system. The subject of this paper is the use of a central computer in an unusual communication suite on an unusual ship. Although it might be difficult to make a commercial justification of such a system in 1981, there is food for the mariner's thought in adjusting to the revolutionary changes which have been made and are yet to come.

"COLAW—Collision Avoidance Warning System" by Capt. **H.L. Peterson.**

Synopsis — Maritime telecommunication has many unsolved problems. In some cases, the technology exists, but the components need to be fused together in a usable order. The Collision Avoidance Warning System described in this paper is such a multiple solution. Mid-ocean collisions do result, and COLAW provides a simple means of alerting two ships that the distance between them is close enough that caution should be exercised to avoid collision. Although the frequency reservation for the system described in this paper is available for one usage, the 1982 Mobile Services WARC must authorize additional (but not interfering) use for the frequency. Thus, action needs to be begun now for ITU action in 1982.

"Accuracy Limitations of Multilateration Radiolocation Systems" by T.A. **Moore,** National Oceanic and Atmospheric Administration.

Synopsis — This paper discusses the basic trilateration system for marine position fixing with dependence on range accuracy and geometric dilution, the influence of geometric angles on position location. Equations are developed and summarized for expressing the accuracy of location by ranging to two targets or survey points. Errors relative to the error parallelogram and error ellipse are compared. The expansion from trilateration to multilateration systems, the repeated application of trilateration, is then demonstrated with configurations, equations and processing techniques, smoothing, to demonstrate accuracy limitations. The experience of companies and agencies using multilateration techniques is reported. Configurations for improved accuracy and benefits with multilateration and smoothing versus the normal trilateration techniques are noted.

"A Low Cost Radar Training System" by **R.F. Kosar,** ULTRAtec.

Synopsis — Deck officers are responsible for the safe navigation and passage of both the vessel and cargo. Present and proposed rules are specific about the need and the use of shipboard radar equipment. Rules recently proposed by the U.S. Coast Guard for Radar Observer Endorsement-

(continued on page 8)

1981 RTCM ASSEMBLY

(continued from page 7)

Demonstration of Skills places a burden on the maritime industry to provide simulator-based examinations for Radar Observer Endorsement and renewals. Presently, training schools capable of providing this testing of skills are limited in number and facilities. ULTRAtec has designed a low-cost radar-training system suitable for both training in basic radar scope interpretation and operation, and for demonstration of skills for the Radar Observer Endorsement renewal.

"River Navigation Today and Tomorrow in Western Europe" by **J.W. Mantel,** Radio-Holland B.V.
Synopsis — The countries along the borders of the Rhine River came together in order to try to regulate several rules for ships sailing the River Rhine in the early 1960s. These ships are only allowed to proceed in reduced visibility in case the ship is equipped with: a special type approved Rhine-River radar, a VHF, a rate of turn indicator and a radar-trained person is onboard. It seems now that within a year or two all cargo passenger ships on all inland waters will have to comply with these rules. This paper describes these special units, designed for use by the river vessels.

"The Next Generation SATCOM Terminal" by **R.K. Smith** and **G.S. Jones,** Navidyne Corporation.
Synopsis — The 1980s will be a decade of sustained growth in the use of marine satellite communications. Techniques and applications introduced with the MARISAT system will mature, through INMARSAT, into a global data communications network which permits ships at sea to fully participate in the "data communications revolution." New users, plus replacement of first-generation SATCOM terminals, will create strong demand for the next generation of terminals, incorporating technological advances in microprocessors, CRT displays, memory and antenna stabilization. This paper compares characteristics and technology of the first and next generation SATCOM terminals and describes an operator's console using a CRT display and digital keyboard.

Further information about the 1981 RTCM Assembly may be obtained from the executive secretary of RTCM, P.O. Box 19087, Washington, D.C. 20036; telephone (202) 296-6610.

ASNE Day 1981 Scheduled For April 30-May 1 In Washington

This year's American Society of Naval Engineers ASNE Day meetings will be held on Thursday, April 30 and Friday, May 1 at the Shoreham Hotel in Washington, D.C. The theme of the technical program is "Naval Design and Engineering — New Dimensions."

In addition to the two full days of technical sessions, luncheons will be held on both days, and the 64th Annual Banquet will take place at 2000 on Friday night, with Vice Adm. **C. Russell Bryan,** USN (ret.), ASNE president, presiding. A reception at 1900 will precede the banquet.

TECHNICAL PROGRAM
THURSDAY, APRIL 30

Session No. 1, Regency Ballroom, (Ship Design I). Moderator: Rear Adm. **James H. Webber,** USN.
0900 The Challenge of Design: Rear Adm. **James W. Lisanby,** USN.
0945 Development of Requirements: Rear Adm. **John T. Parker,** USN.
1030 Streamlining the NAVSEA Ship Design Process: **Robert J. Riggins.**

Session No. 2A, Palladian Room, (Ship Design II). Moderator: Rear Adm. **James W. Lisanby,** USN.
1430 What It Is Like To Design a Naval Ship in NAVSEA Today: Cdr. **Clark Graham,** USN.
1515 What It Is Like To Design a Combat System in NAVSEA Today: Capt. **T. Michael Shortal,** USN.
1600 Ship Design and the Navy Laboratory: **William M. Ellsworth** and **Dennis J. Clark.**

Session No. 2B, Diplomat Room, (Ship Design Methodology). Moderator: **Robert P. Giblon.**
1430 Energy Considerations Study on Naval Ship Fuel Consumption Variations: **John J. Slager, Carlos A. Tomassoni** and **William C. Sandberg.**
1515 A Guide To Generic Seakeeping Performance Assessment: **Nathan K. Bales** and **Daniel S. Ciezlowski.**
1600 "Design Budgeting" — A Bold New Ship Acquisition Strategy — Now a Proven Concept. **Paul S. Jarvis, J. David Kazal, Donald B. Campbell Jr.** and **Maurice W. Haff.**

FRIDAY, MAY 1

Session No. 3A, Palladian Room, (Combat Systems). Moderator: Rear Adm. **Kleber S. Masterson,** USN.
0930 The Needs for Modern Technology and the Impacts on Combat System Design: **Leonard C. Thomas.**
1015 The Unimast Concept — A Major Departure in Shipboard Radar Antenna Installation Philosophy: **Roy J. Biondi** and **Bradford E. Kruger.**
1100 The Latest in Ship Weapon Launchers—The Vertical Launching System: **Seth B. Moorhead.**

Session No. 3B, Diplomat Room, (New Concepts). Moderator: **Nathan Kobitz.**
0930 Combat System Engineering and the Top Level Requirements: Cdr. **Charles W. Truxall Jr.,** USN (ret.).
1015 Surface Ship Conform—Dimension 2000: Cdr. **Michael R. Terry,** USN.
1100 A Logical Integrated Approach to Naval Ship Design: Lt. Cdr. **Michael R. Reed,** USN.

Session No. 4A, Palladian Room, (Ship Design III). Moderator: Rear Adm. **John D. Beecher,** USN.
1430 Machinery Arrangement

Design—A Perspective: **Michael E. Resner, Stephen H. Klomparens** and **John P. Lynch**.
1515 Detailed Design — FFG-7 Class: Capt. **Robert E. Stark,** USN (ret.) and Capt. **David M. Stembel Jr.,** USN.
1600 HANDE — A Computer-Aided Design Approach To Hydrofoil Ships: **James H. King** and **Matthew D. Devine**.

Session No. 4B, Diplomat Room, (Energy Conservation). Moderator: Rear Adm. **Thomas M. Hopkins,** USN.
1430 Energy Conservation for Propulsion of Naval Vessels: Dr. **Eugene F. Brady**.
1515 The Age of Sail — Is It Over?: **Kenneth C. Morisseau**.
1600 U.S. Navy Shipboard Energy R&D—An Overview: Dr. **C.F. Krolick**.

Advance registration may be made through headquarters: ASNE, Inc., 1012 14th Street, N.W., Suite 807, Washington, D.C. 20005; (202) 737-0757. On-site registration will begin at 1600 on Wednesday, April 29 in the Executive Room of the Shoreham Hotel, and continue at 0800 on Thursday and Friday.

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Unified Industries, Inc.
VCT Corporation
Vickers Limited/Rolls-Royce Motors Inc.
Westinghouse Electric Corporation
Worthington Group

Long Beach Terminal Orders Two Additional Transtainer Cranes

Long Beach Container Terminal, Inc., recently ordered two Transtainer® cranes from Paceco, Inc. of Alameda, Calif. Paceco, worldwide manufacturer of dockside, terminal, and shipboard container handling cranes, is a subsidiary of Fruehauf Corporation, Detroit. The two rubber-tired Transtainer cranes will be added to the two Transtainer cranes recently delivered by Paceco and put into operation at the Port of Long Beach, Pier J container terminal.

These 30-long-ton terminal cranes will have 74-foot spans giving them the capability of stacking 20-foot and 40-foot containers four-high and six-wide, including a truck roadway. They will be equipped with reeved-in telescopic spreaders and air-conditioned cabs for operator comfort.

Paceco's Gulfport, Miss., manufacturing facility will fabricate the crane components, which will be shipped by rail to the Long Beach site for erection. The new terminal cranes are scheduled for delivery in mid-1981.

Trinity Forms New Marine Marketing Corporation— Keeney Named President

Trinity Industries, Inc. of Dallas has announced the formation of a new corporation to market its marine products. The new corporation, Trinity Marine Marketing, Inc., will be responsible for marketing the marine products manufactured by its Ingalls Iron Works and Equitable Shipyards facilities. The Ingalls Iron Works subsidiary of Trinity has shipyards in Decatur, Ala. and Bainbridge, Ga. The Equitable subsidiary has yards at Madisonville, La. and New Orleans.

The principal product of these shipyards is river hopper barges for the grain and coal trade operating on the U.S. inland waterways system. Production capabilities and assembly-line techniques employed by these facilities combine to make Trinity the world's largest barge producer, the company states. Trinity's expertise in the construction of LASH and SEABEE barges on an assembly-line basis has contributed to its success as a leading producer of river hopper barges.

Trinity Marine Marketing is headed by **C.M. Keeney** as president. Mr. **Keeney** was formerly president of Trinity's Equitable

C.M. Keeney

Shipyards subsidiary. He served in that position for 11 years prior to the formation of the new marketing corporation, which is headquartered at 3616 I-10 Service Road South, Suite 109, Metairie, La. 70001.

Theodore Lehman Named Marine Sales Manager At Electro-Motive Division

Theodore J. Lehman

The promotion of **Theodore J. Lehman** to the position of manager of marine sales at Electro-Motive Division of General Motors Corporation has been announced by **Warren A. Fox,** director of sales and service.

Mr. **Lehman** joined Electro-Motive Division in 1967 as a senior engineer, followed by his promotion to supervisor of sales engineering in 1976. In 1977 he was named district manager, export power products, the position he held prior to his recent promotion.

Atlantic Marine To Build Two Supply Vessels For Tidewater Marine Service

Atlantic Marine, Inc. of Ft. George Island, Fla., has been awarded a contract to construct two supply vessels for Tidewater Marine Service, Inc. of New Orleans. The 180 by 40 by 14-foot vessels are designed to carry bulk and liquid muds. The vessels will be built to incorporate Atlantic Marine's stock hull design and Tidewater's general arrangement requirements. The propulsion units will be Caterpillar D399 engines driving Reintjes gears.

This order marks Atlantic Marine's entry into the Gulf Coast supply vessel industry. The Jacksonville area shipyard constructs steel-hulled vessels, including posted and inland drill barges, workboats, and specialized vessels for offshore and river use.

Bremer Vulkan To Build Multipurpose OBO Ship For Norwegian Owner

Bremer Vulkan AG, Bremer-Vegesack, Federal Republic of Germany, has recently received a newbuilding order placed by the Norwegian shipowner group Tschudi & Eitzen. BV's hull number 1029, the vessel is scheduled for delivery in May 1982.

With a carrying capacity of about 75,300 dwt, this novel type, multipurpose OBO carrier will be capable of transporting various types of liquid and dry cargoes, as well as a combination of both.

The 39,000-grt OBO will have an overall length of 798.5 feet, beam of 105.7 feet, depth of 67.3 feet, and draft of 47 feet. Propulsion will be by a Bremer Vulkan MAN K8SZ 70/150 CL slow-speed diesel engine with an output of 16,500 bhp at 117 rpm. The vessel will be classed by Det norske Veritas.

Charles Carney Joins Nav-Com Incorporated As Vice President

Charles S. Carney

Nav-Com Incorporated, Deer Park, N.Y., has announced the appointment of **Charles S. Carney** to the position of vice president advanced program management, a newly created post reflecting the company's concentration on integrated communication and navigation systems, including computer control and management.

Mr. **Carney** joins Nav-Com with an extensive background in general communications, as well as marine communication. He was formerly vice president of marketing for Communication Associates Inc., and prior to that director of maritime marketing for Collins Radio Company.

Gulf Fleet Marine Will Add 19 New Vessels At Total Cost Of $50 Million

Gulf Fleet Marine Corporation, one of the Houston Natural Gas Corporation (HNG) group of companies, has announced a $50-million construction program that will result in the addition of 19 new vessels during the next two years. **Richard M. Currence**, Gulf Fleet president, said deliveries will include a supply vessel with extensive fire-fighting capability, four traditional 185-foot supply vessels, four medium-horsepower towing/supply vessels, five 4,200-horsepower class tugs, three 260-foot deck barges, and two 110-foot supply/utility boats. The vessels will be built at shipyards in southern Louisiana and Mississippi.

The first delivery was completed recently, and an additional seven vessels are expected to join the fleet prior to the end of 1981. The remaining 11 vessels are scheduled for delivery during the first three quarters of 1982. Gulf Fleet Marine has had a rapid growth over the past decade. It began with 20 vessels and will have 121 in the fleet at the conclusion of the current construction effort. In addition to the Gulf of Mexico, Gulf Fleet operates from facilities in Brazil, Egypt, Mexico, United Emirates, Scotland, Saudi Arabia, and India.

"We have planned our current construction program to encompass those vessels which will meet the immediate needs of the expanding offshore petroleum and construction industries, and we will continue to provide the full spectrum of marine transportation services to the offshore industry on a worldwide basis," Mr. **Currence** said.

ON THE COVER

Twin EMD Diesels Power Newest Turecamo Tug Built By Matton

Turecamo Coastal & Harbor Towing Corporation of New York recently added the 3,900-bhp Joan Turecamo (shown above and on the cover) to its growing fleet of modern tugboats. The new vessel, classed + A1 "Ocean Towing Service" by the American Bureau of Shipping, was built by Matton Shipyard in Cohoes, N.Y., a Turecamo subsidiary.

Intended for use in the firm's general towing service, she is 114 feet 8 inches long with a beam of 32 feet 2 inches, depth of 16 feet 8 inches, and normal operating draft of 13 feet. Fuel capacity is 57,300 gallons.

Propulsion power is provided by twin GM Electro-Motive Division 16-645-E6 diesel engines, each rated 1,950 bhp at 900 rpm. The reverse/reduction gears are Falk model 2435, and the 120-inch, 3-bladed stainless-steel propellers were supplied by Coolidge.

Capable of attaining a free-running speed of 14 knots, the tug is constructed with an upper pilot house that affords unobstructed vision over large petroleum barges that she is designed to push. In addition to her full pushing capability, the 192-gt vessel is equipped with an Almon A. Johnson series 229 towing winch. The electrohydraulic capstan is a New England Trawler model X1524; steering gear is Frydenbro model HS-20 with ITT Decca Marine controls.

The vessel is fully automated with Hose-McCann equipment, and is fitted with the most modern navigation and communication gear. ITT Decca Marine supplied the Loran C model 708, autopilot model DP 752-G, two RM 914C radars with one slave unit, gyrocompass model MB 12, and LAZ 43 depth finder. The direction finder is a Benmar ADF 168; Motorola provided the 55/75 VHF and the SSB radios.

Air-conditioning is by Dunham-Bush, and coatings were supplied by International Paint.

Company president **Bart Turecamo** stated, "We plan to use the Joan Turecamo in conjunction with our new 100,000-barrel oil barge Marie Tilton." The Turecamo company provides a wide range of towing services, from ship docking to coastal towing, operating from the Great Lakes to the Caribbean.

Among those present at Whitehall Club reception following the recent commissioning of the tug Joan Turecamo in New York were (L to R): **James Newman**, vice president, Turecamo Coastal & Harbor Towing Corporation; **Bart Turecamo**, president of Turecamo Coastal; **Peter Nystad**, vice president of White Stack Towing & Transportation Company, Charleston, S.C.; and **Bart Turecamo Jr.**, vice president of Turecamo Coastal. The Turecamo firm is headquartered in Staten Island, N.Y.

New Cruise Line Features Yacht-Like Luxury Ships

A new cruiseship line featuring smaller, yacht-like, luxury vessels (drawing shown above) carrying 120 passengers to exotic world destinations will begin service in spring 1983, it was announced in New York recently. The new line is being formed by **Helge Naarstad**, a Norwegian who was formerly president of Miami-based Norwegian Caribbean Lines. He said an agreement to build four new ships, with an option for another four, has been signed with the Wartsila Shipyard of Helsinki, Finland.

The investment capital for the venture is $100 million, with 30 percent from Norwegian investors and the rest mainly from U.S. sources. "Already more than 80 percent of the investment capital has been raised," Mr. **Naarstad** said. "While there is still room for additional investors, I expect the remaining capital to be raised quickly," he added.

The cruise line, as yet unnamed, will be based in the U.S. An assets holding company, Marine Investors & Shipowners, Inc., has been formed with Mr. **Naarstad** as chairman. "We are aiming at a special class of vacationer, one that expects the highest standards of personalized treatment," Mr. **Naarstad** said. "We will provide these, plus an ability to sail in any waters in the world, and into ports that larger cruise ships cannot enter."

One ship will sail in the Mediterranean, and the others in the Far East, South Pacific, and Caribbean. The yacht-like ships will carry only 120 passengers, all in large, outside suites, and crews of 50, with all crew members berthed in individual private cabins. The new ships have been designed by Norwegian naval architect **Petter Yran** of F.S. Platou A/S, Oslo. The first ship will be put into service in spring 1983; the others will follow at six to eight-month intervals.

Some maritime cleaning no-how from Sea-Wash.

No cleaner like it.

Sea-Wash is a time-proven, job-tested cleaner capable of taking on the toughest heavy-duty maritime cleaning jobs without the hazards you usually face. There's no other cleaner available that gives you such positive results while eliminating the negative features of cleaners commonly used in the maritime industry. Here's just a brief summary of what you should know about Sea-Wash no-how:

No flash point.

Because Sea-Wash is a water-based liquid with no petroleum-based additives, it has no flash point. Your workers never have to worry about Sea-Wash burning under any circumstances.

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All of which adds up to efficiency. Your workers can keep working, even under the most difficult circumstances. Welding repair can go on at the same time, in the same place, while you're cleaning. Man power is optimized. Cleaning down time is eliminated.

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Sea-Wash takes on the toughest grease, carbon or heavy oil cleaning jobs and cleans and degasses in one application without leaving any residue. So you can paint, weld or repair an area immediately.

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OSHA, E.P.A. registered; accepted by U.S.D.A.; Licensed by Warren Springs.

No milky white emulsion.

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No problems with biodegradability.

Sea-Wash is biodegradable. So problems with environmental contamination are drastically reduced.

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You can take Sea-Wash anywhere without worry about combustion.

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Sea-Wash makes petroleum-based cleaners obsolete. It takes on the toughest, heavy-duty maritime cleaning jobs and really performs. We've got a file full of case histories to prove our point. Yet it's hazard-free. And, because it lets you work more efficiently, it makes incredible economic sense. It's available in 55 gallon drums and tank cars, and our handy 5 gallon pail can be a big help at sea. Available in three concentrations: Extra Heavy Duty, Heavy Duty and General Purpose.

Call us or write today and give us a chance to prove that there's no maritime cleaner like Sea-Wash. Environmental Chemicals, Inc., 487 Division Street, Boonton, N.J. 07005. (201) 335-2828, TWIX 710-987-8311.

ECI is now adding a few select companies to our distributor organization. If interested, contact the address above.

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201-866-3109

Phillyship
P. O. Box 1286 (19105)
826 South Swanson St.
Philadelphia, Pa. 19147
215-271-7400

Rollin Inc.
P.O. Box 308
Stroudsburg, Pa. 18360
717-424-2632

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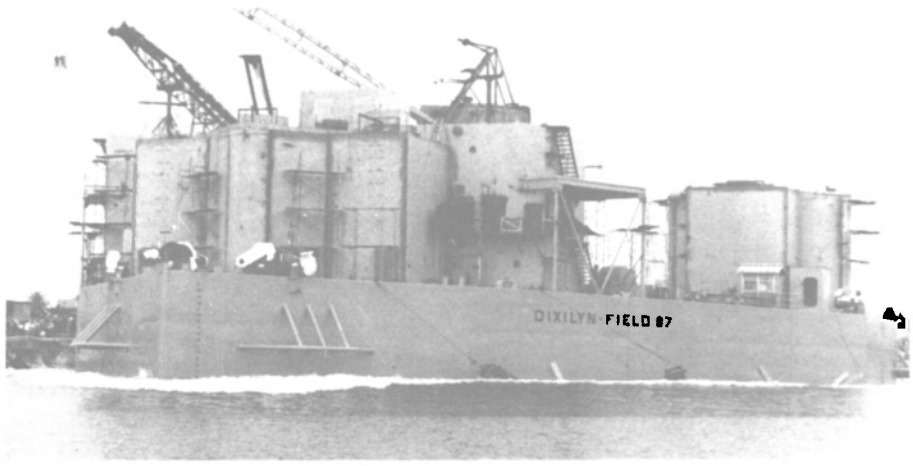


Levingston Launches Jackup Drilling Rig For Dixilyn-Field

Levingston Shipbuilding Company has launched the Dixilyn-Field 87 (shown above) at its shipyard in Orange, Texas. The triangular shaped, Levingston designed Class 111-C jackup drilling rig is 200 feet by 186 feet by 23 feet.

When this self-elevating drilling platform is completed, it will have three four-chord, square truss legs that will be 414 feet tall. These sturdy legs will allow the vessel to drill in 300 feet of water to a drilling depth of 25,000 feet. One of the customer requirements of this rig is that it be capable of operating in temperatures of minus 20 degrees centigrade, and withstand winds of up to 125 mph and seas of 50 feet.

Accommodations are available for 80 people and the rig is equipped with two galleys and two messrooms. It will meet the requirements of the United States Coast Guard and the American Bureau of Shipping.

Dixilyn-Field is a major operator of land rigs as well as offshore vessels, and has been in business 25 years. This worldwide company, based in Houston, is a subsidiary of Panhandle Eastern Pipe Line Company with headquarters also in Houston.

McKelvey Named Chairman Of Saint John Port Development Commission

E. Neil McKelvey, immediate past president of the International Bar Association, has been elected chairman of the Saint John Port Development Commission. A member of the commission for the past three years, he succeeds **Thomas L. McGloan,** who has served three one-year terms as chairman. Mr. **McGloan** remains as a commission member. **Hartley Green,** a city councilor, has been reelected vice chairman.

Mr. **McKelvey** is a senior partner in the Saint John law firm of McKelvey, Macauley, Machum. In addition to his position in the International Bar, he has served as president, vice president, and treasurer of the Canadian Bar Association.

Hampton Roads SNAME Hears Paper On Shipboard Piping

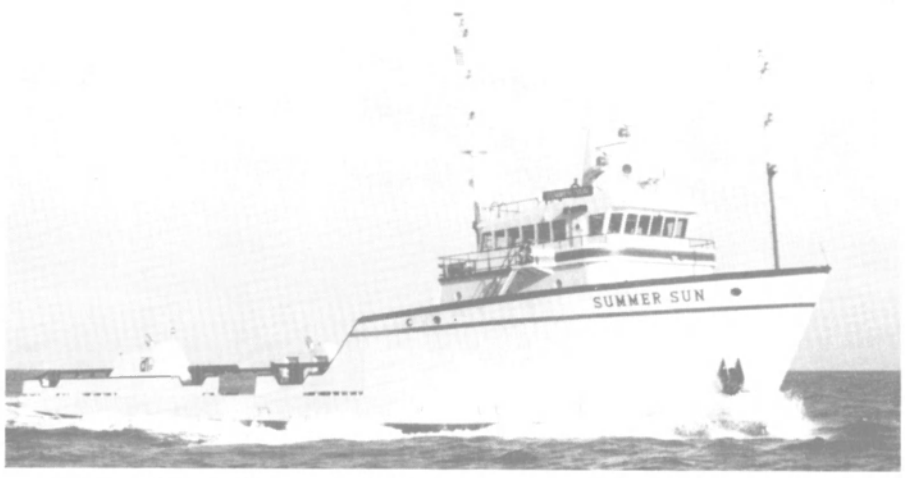
The Hampton Roads Section held its most recent dinner/technical meeting at Fisherman's Wharf in Hampton, Va. The evening's paper titled "A Survey of Shipboard Piping Design and Fabrication" was presented by **Lamar E. Williams** and **Bob S. Oglesby**. A large turnout of 139 members and guests was present to hear this informative paper. Mr. **Williams** is presently employed as a senior engineer in the Hull Technical Department of Newport News Shipbuilding. Mr. **Oglesby** is employed as supervisor of outfitting in the Industrial Engineering Department of Newport News Shipbuilding.

Their paper discussed the domestic and foreign practices relative to shipboard piping design, fabrication, and installation. Although the paper's emphasis was on commercial shipbuilding, many practices discussed applied to both commercial and Naval work. Individually defined phases of piping design, fabrication, and installation were discussed, as well as various "integrated" approaches to each of these activities. Material presented was based largely upon on-site surveys by the authors of 22 domestic facilities, including 13 shipyards, four design agents, two piping fabrication equipment manufacturers, two piping fabricators, and one research facility. Material from on-site surveys by the authors of four Western European shipyards was also presented.

Following the presentation of the paper it was commented on by **Harry Sheridan** of David W. Taylor Naval Ship R and D Center, **L.D. Chirillo** of Todd-Seattle, **Per Bech** of Odense Steel Shipyard Ltd., **George Uberti** of NASSCO, and **George Ponton** of Advance Marine Design. All were in agreement that the paper is a valuable addition to the store of knowledge about the shipbuilding environment, and will prove to be a useful tool for increasing the productivity of the shipbuilding community.

Participants at recent SNAME Hampton Roads Section meeting included (L to R): **W.C. Ward Jr.,** Technical Programs Committee; **L.E. Williams Jr.,** coauthor; **D.L. Blount,** vice chairman; **R.S. Oglesby,** coauthor; and **R.L. Harrington,** secretary-treasurer.

Halter Delivers Tug/Supply Boat To D.F. Levy Marine



Halter Marine, Inc. has delivered the Summer Sun (shown above), a tug/supply boat, to D.F. Levy Marine Limited I, Morgan City, La. She is the second of six vessels to be built at Halter's Moss Point, Miss., division for the Morgan City operator. A sister vessel, the Spring Rain, was delivered recently, while the April Showers, Spring Mist, September Morn, and Winter Snow will follow this summer. The two new vessels are now serving the offshore oil and gas industry in the Gulf of Mexico.

The Summer Sun is 180 feet in length with a 40-foot beam and 14-foot depth. She is powered by two GM Electro-Motive Division 12-567 BC diesel engines developing 1,260 horsepower each at 810 rpm. Falk LST reduction gears with a ratio of 2.98:1 turn the two stainless-steel, 90-inch-diameter four-bladed propellers. Engine controls were provided by Westinghouse and a Bird-Johnson 300-hp bow thruster driven by a GM Detroit Diesel 8V71 engine improves maneuverability and station keeping.

The Summer Sun can carry 4,000 cubic feet of dry bulk mud and 1,660 barrels of liquid mud. She has a cargo capacity of 525 long tons and has 3,177 square feet of cargo space on her aft deck, which is fitted with an HBL anchor windlass.

Two Delco 99-kw generators powered by GM Detroit Diesel 8V71 engines provide electric service, while two Quincy D325 compressors supply air service. Ballast, bilge, and fuel transfer pumps were provided by Aurora.

The Summer Sun is American Bureau of Shipping classed +A-1, Full Ocean Towing, "E", AMS, and is U.S. Coast Guard Subchapter I and U.S. Public Health approved.

Trico Limited III Seeks Title XI On Four Vessels To Cost $13.3 Million Total

Trico Limited III, Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of four tug/supply vessels intended for operation in the Gulf of Mexico. Eastern Marine, Inc., Panama City, Fla., is the proposed builder of the vessels, two of which are to be 180 feet in length, and two 166 feet. Delivery dates have not been established.

The requested guarantee is for $11,637,000, or 87½ percent of the vessels' estimated cost of $13,300,000.

Ship Structure Committee Offers Three Free Technical Reports

The Ship Structure Committee, an interagency advisory committee dedicated to improving the structure of ships, has recently published three new technical reports that are available free of charge.

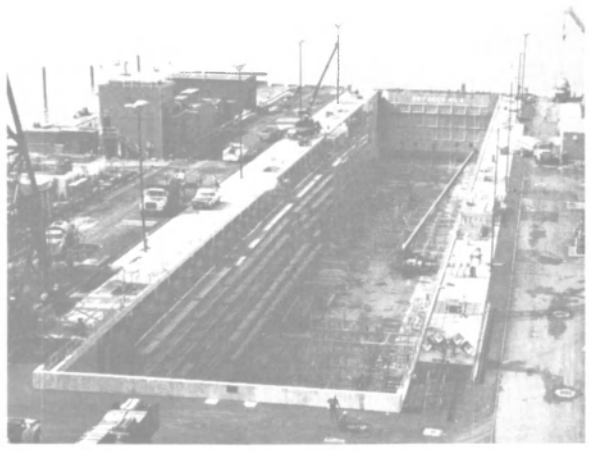
SSC-294, "Further Survey of In-Service Performance of Structural Details," is the completion of an earlier SSC Report (SSC-272) that defined and cataloged structural details from 86 commercial and naval vessels showing their incidence of failure from a variety of causes, including poor design or workmanship, neglect, or heavy weather. With this substantial data base, meaningful statistical analyses can be conducted to provide information on detail selection, proper fabrication, and proper maintenance and repair.

SSC-295, "Non-destructive Inspection of Longitudinal Stiffener Butt Welds in Commercial Vessels," is the result of an investigation of the quality control requirements for the subject weldments. A survey of past casualty reports and repair shipyard experience indicated that the current accepted procedures are sufficient.

SSC-296, "Review of Fillet Weld Strength Parameters for Shipbuilding," details the fillet weld specification of 12 code-setting bodies and presents a developmental procedure for a rational analysis of required weld strength. Further effort in the analysis of fillet welds is planned.

For copies of these reports, an index of past reports or further information contact Secretary, Ship Structure Committee, U.S. Coast Guard Headquarters, G-MMT/13, Washington, D.C. 20593.

New Drydock Doubles Capacity At Newport News Shipbuilding



Workmen put the finishing touches on Newport News Shipbuilding's new $28-million drydock facility for the overhaul and repair of submarines for the U.S. Navy.

A $28-million drydock facility that virtually doubles Newport News Shipbuilding's capacity for submarine overhaul and repair was opened recently with the arrival of the USS Lafayette (SSBN-616). The nuclear-powered ballistic missile submarine entered Dry Dock No. 4 to begin an 18-month, $75-million renovation.

Newport News currently has contracts totaling about $338 million to overhaul five submarines, and contracts to plan for similar work on four other submarines. It is the only private shipyard performing this type of work on Navy submarines.

The drydock construction began in January 1979, and was performed by Tidewater-Kiewit, a joint venture between Tidewater Construction Corporation (Norfolk) and Peter Kiewit Sons' Company (Omaha, Nebraska), and Conrad Brothers, Inc. (Chesapeake).

The new drydock is 525 feet long, 75 feet wide, and 44 feet deep. An inactive shipway (No. 7) was demolished to make way for the dock and adjoining support facilities. One and a half acres of land was reclaimed from the James River to serve as an additional bulkhead.

The drydock features a new type of steel staging that slides out from the drydock wall to reach the submarine's hull. Two pumps enable the dock to be pumped out in less than 4½ hours. The floating removable gate to the drydock was fabricated by the shipyard.

Newport News currently has 10 Navy ships in various phases of construction: two aircraft carriers and eight Los Angeles class submarines. The shipyard is also jumboizing two ships for commercial customers.

Wellspring Barge Seeks Title XI On 75 Barges To Cost $22.5 Million

Wellspring Barge Partnership, Minneapolis, Minn., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of 75 covered hopper barges—40 to be 195-foot, rake-type barges and the remaining 35 to be 200-foot, box-type barges. All are intended for use on the inland rivers of the United States.

The barges are being built by Equitable Shipyards, Inc., New Orleans, La., with deliveries scheduled from July through December 1981. The requested guarantee is for $19,723,594, or 87½ percent of the total $22,541,250 estimated cost.

ARCO SUPPORTS ACADEMY — U.S. Merchant Marine Academy superintendent Rear Adm. **Thomas A. King** (right) accepts a $3,000 contribution to the Academy's Foundation from representatives of Atlantic Richfield Company's Marine Division, **Jeffrey Shaw** (center), and **John Carroll**, a 1978 Kings Point graduate. The contribution helps support midshipman cultural, social, and athletic programs for which Federal Funds are not appropriated.

Fuel Utilization Seminar And Exposition Scheduled For Baltimore Sept. 1-4

An international Marine Fuel Utilization Conference/Exposition will be held September 1-4 this year at the Convention Center in Baltimore. Co-sponsored by the Marine Energy Institute, Inc. (MEI) of Baltimore and *The Motor Ship* magazine of London, the event is intended to provide a forum and international trade fair for discussions and exhibitions aimed at resolving the shipping problems raised by the dramatic oil price increases of recent years.

According to MEI president **James H. Cunningham**, the objective of the Conference/Exposition is to convince vessel operators that they can cut operating costs by employing fuel-efficient practices. Cost-efficient use of marine fuels on a worldwide basis would automatically conserve about 20 percent of present consumption, or about 100 million barrels annually, said Mr. **Cunningham**.

For additional information contact **James H. Cunningham** at MEI, 1410 Locust Avenue, Baltimore, Md. 21204; (301) 825-4238.

Enclosed Lifeboats Serve As Escape Craft For Offshore Oil Platforms

Watercraft America, Inc., located in Edgewater, Fla., is designing and building advanced lifeboats and launch systems for installation on offshore drilling and production platforms and ships. Called the Watercraft Survival System, it includes a series of lifeboats, winches, and davits that enable personnel to evacuate quickly and safely in emergencies caused by spills, fire, or gases. The totally enclosed survival craft are installed on offshore platforms, oil tankers, and cargo ships.

The Watercraft boats feature automatic self-righting in case the vessel should capsize; an external water spray system for use while maneuvering through fire; a compressed air system for personnel and engine for use in fire or toxic gas areas; and a full array of emergency equipment.

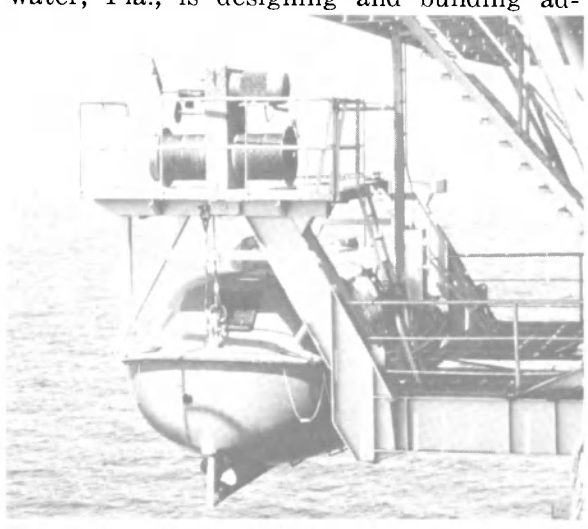
The craft are available in four sizes ranging from 21 feet long with capacity for 23 people to 28 feet long with capacity for 58 people. During production, each craft is carefully tested for performance and reliability, with inspection by the U.S. Coast Guard.

A primary component in the hull and cover of the Watercraft boats is Dion FR® polyester resin supplied by Koppers Company. Dion FR 6692T resin has flame-retardant properties that meet the stringent requirements of the Navy and Coast Guard specifications Mil-R-21607, Grades 1 and 2.

For the boat hulls and domes, the laminate construction consists of a 20-mil minmum international orange gel coat backed with 70-percent resin/30-percent chopped glass skin coat. The structural layer behind the skin coat is made from chopped glass up to ⅛-inch thickness. The process used to fabricate the structure employs the spray-up technique.

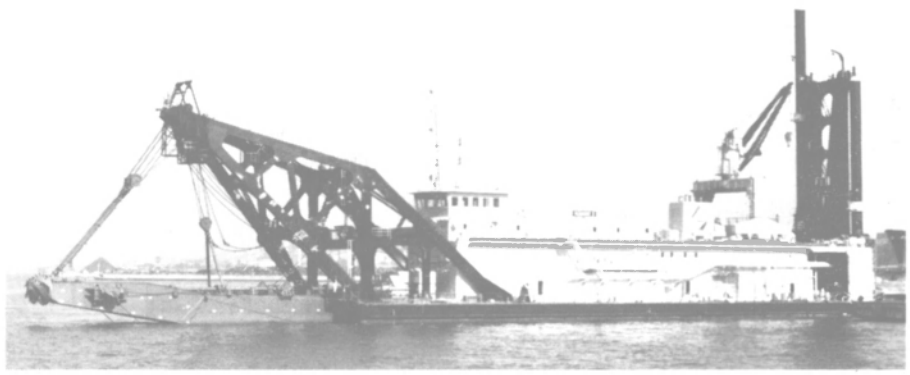
For further information and free literature,

Write 11 on Reader Service Card



This Watercraft 28-foot rig has seats for 58 people and is installed on an oil drilling platform. It can be lowered into the sea quickly in case of emergency. Koppers polyester resin is used to produce the plastic hull and cover for the craft.

IHI Delivers Suction Dredge And Tug To Mexican Government



The Veracruz II (shown above), a 4,500-bhp cutter suction dredger, has been delivered to Secretaria de Comunicaciones y Transportes, Mexico, by the Aichi Works of Ishikawajima-Harima Heavy Industries Company, Ltd. (IHI), Japan. The RD-26, a 1,672-bhp tugboat to be attached to the dredger, has also been delivered.

The new dredger will be used for dredging work at Mazatlan Port in Mexico, which will be carried out by the Mexican Government as a part of its expansion project of ports and harbors on the Pacific Coast in Mexico. The up-to-date cutter suction dredger is equipped with a powerful cutter, suction auxiliary ejector system, spud buffering system, traveling deck crane, and accommodations for 74 crew members. The tugboat will be used for towing the dredger and for other various jobs at the dredging site.

The Veracruz II has an overall length of 336.3 feet, beam of 57.4 feet, and depth of 16.4 feet. Maximum dredging depth is 82 feet to a nominal discharge distance of 8,200 feet. There are two cutting motors, each of 700 kw dc.

Powered by two diesel engines each of 836 bhp, the tug RD-26 has an overall length of 83.3 feet, beam of 23.6 feet, and depth of 10.5 feet. Trial speed was 12.9 knots.

New Consulting Firm Formed By Thomas Keenan And David Walton

Thomas Keenan, president, and **David Walton**, vice president, have established International Marine Consultants, Inc., a technical organization geared to marine operational and technical problems.

Bob Young recently joined the technical staff along with **Robert Wellner**, who is director of operations.

This qualified and experienced staff is available in all areas of engineering, surveying, and transportation consulting.

New Bulletin Available On Twin Disc Line Of Power Takeoffs

Twin Disc, Incorporated, Racine, Wis., one of the world's largest manufacturers of heavy-duty industrial power transmission products, has announced the availability of Bulletin 308 covering its line of power takeoffs. This eight-page bulletin contains specifications, dimensional data, and allowable side-pull load tables for standard PTOs.

Twin Disc standard PTOs cover a range from single plate 6½-inch to triple plate 21-inch sizes. Models are available for installations up to 1,225 horsepower in normal duty applications.

For a free copy of Bulletin 308,
Write 10 on Reader Service Card

Los Angeles SNAME Discusses Liquid Level Gauging By Radar

The Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers gathered for a recent meeting aboard the converted cruise ship Princess Louise berthed in Los Angeles Harbor. The subject of the evening's technical paper, "Radar — A New Approach to Level Gauging," is as current to ship technology as the joggled and riveted frames and webs of the Princess Louise are archaic.

Gorjan Martensson of Saab-Scania prepared and presented the timely paper to acquaint those present with his company's solution to the problem of accurately and reliably measuring liquid levels in ship cargo tanks. He began by outlining the various measuring systems in current use, and detailed the qualities and deficiencies he felt were inherent to each. The author went on to detail the theory of the Saab-Scania radar system that, according to Mr. **Martensson**, overcomes the problems of existing systems by limiting the incursion of the device into the harsh environment of tanks to radio frequency waves. The author concluded his presentation by candidly describing the trials associated with developing a new system for shipboard use.

Shown with model of the Princess Louise during recent meeting of SNAME Los Angeles Metropolitan Section are (L to R): **Charles Heil**, Sections representative; **Gorjan Martensson**, author; **George Stiehl**, vice chairman; and **Ned Stewart**, chairman of the Section.

Glendel Limited Asks Title XI On Two Drill Rigs To Cost $20.8 Million Total

Glendel Limited III, The Woodlands, Texas, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 190-foot, inland waterway barge drilling vessels for use in the Gulf coastal area. Red Fox Fabricators, Inc., New Iberia, La., is building the vessels, with deliveries scheduled for July and August of this year.

The requested guarantee is for $15,649,000, or 75 percent of the $20,866,000 estimated actual cost of the vessels.

Finn Olander Appointed North American Regional Manager For Hempel's

Finn Olander

The corporate management of the Hempel Group in Copenhagen, Denmark, has appointed **Finn Olander** as regional manager-North America for Hempel's Marine Paints' corporate activities. He has been president and chief executive officer of Hempel's Marine Paints, Inc., New York, since 1979. Hempel's is a worldwide manufacturer of marine and protective coatings, with 27 factories worldwide. In the United States and Canada the company manufactures and distributes through a factory in New Jersey and offices / distributors in all major ports in the United States.

American President Lines To Test Feasibility Of 45-Foot Cargo Containers

American President Lines (APL) has announced that it has contracted to build two prototype 45-foot containers in order to evaluate their feasibility for use in international trade. Twenty- and 40-foot containers are the standard lengths in general use today by the maritime industry. The prototypes, which are being built by Fruehauf Corporation, Detroit, will be tested for operational feasibility throughout APL's intermodal system, according to **Richard L. Hill**, APL vice president, land operations, and project manager.

Mr. **Hill** emphasized the importance of testing the new equipment as part of the industry's quest for greater operating efficiency. The larger containers have the potential of speeding the loading and off-loading of vessels, and reducing drayage costs and the costs of inland transportation via the U.S. rail system, which the company uses extensively in its intermodal operations.

Eugene K. Pentimonti, vice president, engineering, said the company's three C-9 diesel containerships, which are scheduled for delivery in 1982, were designed with a structure that can be modified to accept 45-foot containers, as well as the standard 20- and 40-foot lengths. Those containerships will be the largest ever built in the U.S., with a capacity of 2,500 twenty-foot equivalent units (TEUs).

Evaluation of the 45-foot containers is under way both from the operations and the marketing perspectives. **G.E. Bart**, senior vice president, marketing, said APL, as one of the largest intermodal carriers in the industry, feels an obligation to move forward with testing new designs and concepts to provide better service to shippers and also to keep abreast of equipment technology already in use in the U.S. highway system.

New Supply/Fire-Fighting Vessel Delivered To Gulf Fleet Marine

Gulf Fleet Marine Corporation, headquartered in New Orleans, has taken delivery of the Gulf Fleet No. 45 (shown above), a 185-foot by 40-foot by 14-foot supply/fire-fighting vessel from Quality Shipyards, Inc., another Gulf Fleet company, located in Houma, La.

The vessel is powered by twin GM Electro-Motive Division 16-645 E6 diesel engines that generate a total 3,900 bhp at 900 rpm, driving through Reintjes WCV 481 3:1 reduction gears. Equipped with four bulk tanks with a total capacity of 4,000 cubic feet, the Gulf Fleet No. 45 can carry 1,250 barrels of liquid mud or calcium chloride that can be transferred at a rate of 550 gpm at 180 feet, and can carry 141,360 gallons of drill water that can be transferred at a rate of 400 gpm at 160 feet.

In addition to exceeding basic offshore supply vessel requirements, the Gulf Fleet No. 45 is equipped with two fire pumps and four fixed water nozzles for fighting fires offshore. The fire pumps are driven by GM Detroit Diesel Allison 16V-92NA diesel engines installed below deck in segregated pump rooms. Each engine develops approximately 736 bhp at 2,100 rpm while the vessel's fuel system is piped directly to the fire pump engines allowing continual replenishment of the fuel supply for a possible fire-fighting role.

Fire pumps are horizontal split case pumps manufactured by Warren Pump Company and are direct-coupled to the drive engines. Each pump is capable of delivering 5,000 gallons per minute at 177 psi discharge head of saltwater. Total system capacity is 10,000 gallons per minute. The pumps take suction through 24-inch individual sea chests, and discharge through headers located port and starboard.

The 6-inch fire nozzles are mounted on the discharge headers. The discharge piping is arranged in order that either one or both pumps can discharge through any combination of water nozzles. The nozzles are strategically located forward on the catwalk between the stacks and aft on the main deck to allow for maximum flexibility and water spray patterns when fighting offshore fires. Each nozzle is capable of delivering 2,500 gallons of water per minute.

The unique fire-fighting system is also capable of producing up to 4,000 gallons per minute of specially formulated fire-fighting foams. When required, the system can be converted from a conventional water system to the foam system. The foam system is completely self-contained, with 12,319 gallons of foam liquid stored in integral hull tanks.

A 25-hp foam injection pump is piped into the discharge header of the fire system. Foam spray is produced by injecting the foam-making liquid into the system through a specially designed proportioning system that mixes the foam liquid with seawater. In the foam-generating mode, the four water spray nozzle tips are replaced with adjustable fog nozzles.

Fire-fighting system pumps, controls, and valves are installed in the below-deck pump rooms. For ease of access and control they are segregated from the vessel's systems. The special fire-fighting system meets requirements of the Norwegian regulatory agency, Det norske Veritas, 'Fire Fighter I" classification for height and distance of water stream throw.

In a brief ceremony aboard the Gulf Fleet No. 45 at the Chevron Oil Company Docks at Amelia, La., Capt. **William J. Ecker,** USCG, Officer in Charge of Marine Inspection in New Orleans, presented a certificate to Gulf Fleet president **Richard M. Currence**. This represents a significant milestone in the development of the U.S. Coast Guard's Marine Safety Information Systems, which awarded its first computer-generated Certificate of Inspection to the vessel.

The U.S. Coast Guard's Marine Safety Information System has been under development since the mid-1970s. It is designed to ultimately connect, via a data transmission network, all Coast Guard Marine Inspection Offices, Captain of the Port Offices, Marine Safety Offices, District Offices, and Coast Guard Headquarters. This telecommunications network will link these offices to the Coast Guard's Operational Computer Center, where an information system has been developed to maintain all facets of the Coast Guard's activities involved with safety of life, property, and environment in the marine domain.

While this "ultimate goal" is several years away, the system is gradually building toward it by providing limited capabilities to field offices as the system is developed. The New Orleans Marine Inspection Office, the largest office in the United States, has been actively involved in the development of this information system. It is the first office to award a Certificate of Inspection from the information system data base.

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- The largest and most powerful fleet of tugs.
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Docking the EL PASO HOWARD BOYD at the Columbia LNG Corp. Terminal at Cove Point, Md.

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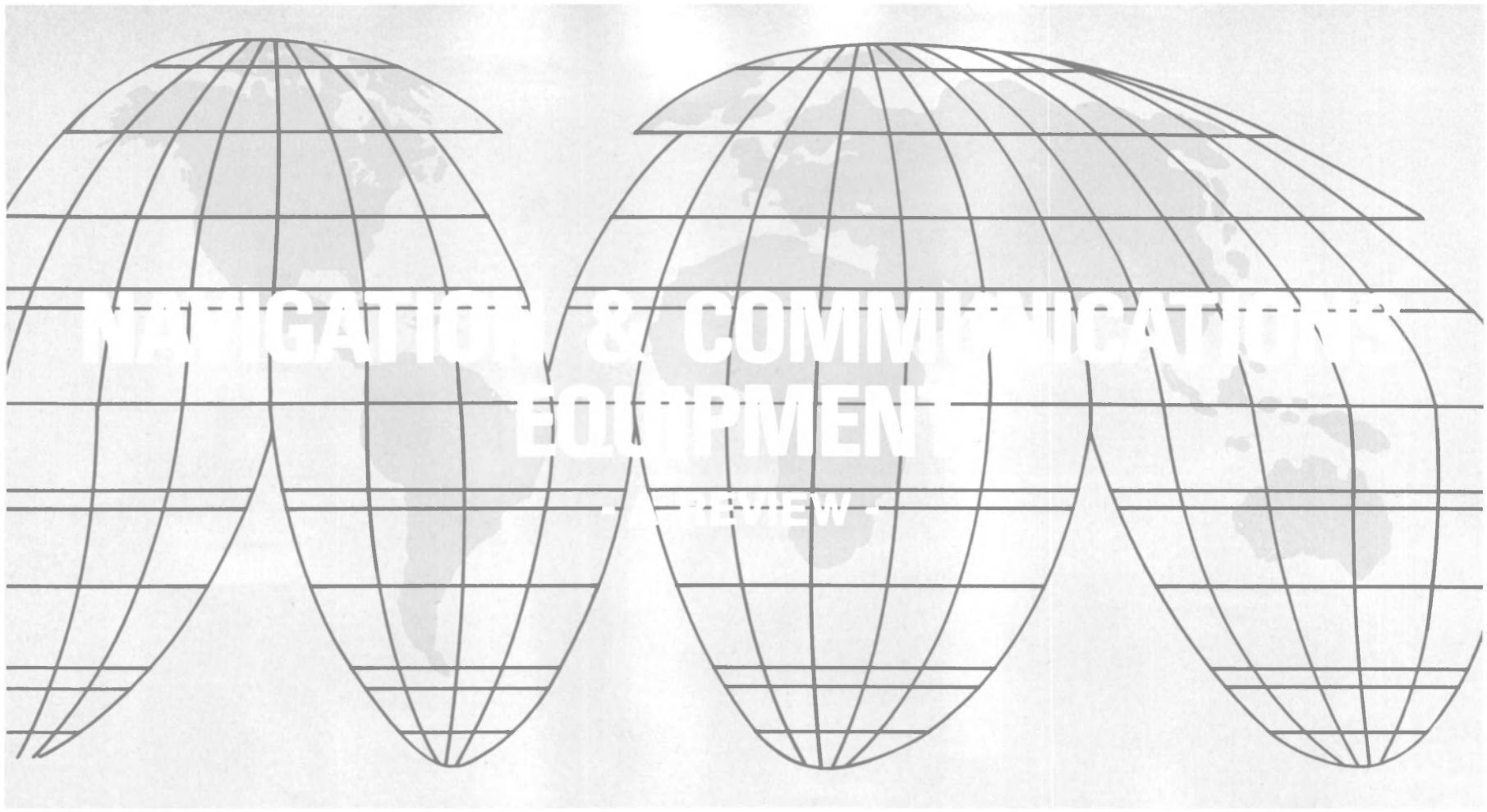

In addition to the traditional safety role, shipboard navigation and communications gear plays an important part in fuel conservation—a vital factor for all merchant ships now sailing the oceans. In view of this, the many companies that supply such equipment to the seagoing fleets as well as the big inland and offshore markets are continually improving their product lines.

We asked the major manufacturers and distributors of marine navigation and communications equipment to tell us about their latest products and their marketing plans; the following review is based on their replies.

CAI

Communication Associates, Inc., Huntington Station, N.Y., has announced the Digiscan® family of microprocessor-based SSB transceivers for the international and U.S. government markets. The first transceivers to offer total, simplified keyboard control, Digiscan is available in output powers of 150, 400 and 1,000 watts.

A number of special features are incorporated in the new design. Digiscan offers automated microprocessor frequency selection of 284,000 channels by keyboard and the choice of 100 programmable channels. It scans the HF spectrum just like VHF, removes spurious signals at the touch of a button, incorporates an emergency alarm and channel, and stays on frequency with a 0.4 Hz/mHz stability. Remote control interface with telephone, teleprinter, facsimile and manual telegraph is possible with a minimum of low-cost accessory equipment.

Available in a readily transportable desktop unit (model 150-ZY), a rack-mounted version (model 1000-ZY), and a desk assembly with rack built in (model 1000-ZY-R), Digiscan is expected to find wide application as emergency or primary communications around the world.

For further information,

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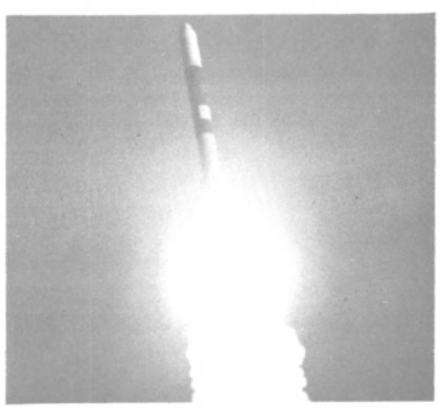
COMSAT



MARISAT, the world's first commercial satellite communications system, reaches a milestone of five year's successful operation in July 1981. MARISAT today provides worldwide telex, telephone, facsimile, and data communications to more than 625 ships and offshore rigs at sea. These include all variety of ships, from private yachts, construction barges, and containerships to giant drilling platforms, luxury passenger liners, and VLCCs.

Steps are now being taken for the transition of MARISAT to the new and expanded international INMARSAT System, which will be operational in early 1982. All shipboard terminals now in use will be compatible with the INMARSAT System, thus assuring a smooth transition for present users of MARISAT services.

In mid-1981, a new service offering will permit ship-to-U.S. transmission of high-speed (56 kbps) data, primarily for the seismic industry. Under INMARSAT next year, new shore stations will begin service in Europe, Japan, the Mideast, and Asia, making maritime satellite communications directly available at greater economies to new areas of the world.

For further information on MARISAT from Communications Satellite Corporation,

Write 21 on Reader Service Card

DIGITAL MARINE

The Northstar 7000 is the successor to the standards set by the ward-winning Northstar 6000. Developed by Digital Marine Electronics, the new unit is a computerized Loran C navigator that is comprised of components with "full-control" weatherproof remotes. Up to four remotes can be placed anywhere onboard, with each operating independently of the others.

The Northstar 7000 features many electronic advances that make Loran C navigation more accurate and reliable, including completely automatic notch filters that self-adjust and remove interference; an ECD (Envelope to Cycle Discrepancy) monitor that analyzes and corrects signal distortion; and a new power supply that operates at 200 kc, which eliminates any receiver-made noise in the Loran C band.

Designed for easy operation, the Northstar 7000 contains more than 200 "plain-English" messages that provide the operator with navigating cues. Among the information available at the touch of a button is: true speed over the bottom, distance to go, cross track error, estimated time of arrival, distance and bearing, latitude/longitude, and a Phantom Loran A™ conversion.

The 7000 can store a minimum of 60 way points and enter up to

(continued on page 24)

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We Have Designs For Your Future

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Now for retrofits and new installations, a split stern tube seal. Using time-tested marine quality materials. Engineered for top performance in extreme operating conditions. Proven in heavy ice and at peripheral shaft speeds as high as 10 m/s. Providing flexibility to accommodate shaft movement and vibration. For fixed pitch and controllable pitch propeller systems with shaft diameters up to thirty-nine inches. The split design permits disassembly for inspection and maintenance—without withdrawing the tailshaft, propeller or rudder. Discover how Cedervall seals by Bird-Johnson Company can solve past problems. And contribute to a safe, economical future. Contact our Product Specialist, Mr. G. Robin King.

BIRD-JOHNSON COMPANY MARINE DIVISION

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Navigation/Communication Equipment Review—Digital Marine

(continued from page 22)

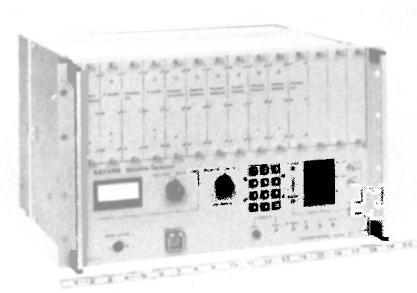
20 different routes, and a steering indicator will guide the helmsman along. A Save and Recall feature "saves" the current time and position of a vessel with a push of a button, and the recall button displays any of the last 20 points saved.

The Northstar 7000 also gives the operator a choice of the navigation language that suits him best: speed and distance information in nautical miles, statute miles or kilometers; position in Loran C TD's, Lat/Lon or the Phantom Loran A readout. The unit can also be used as a watch alarm, stopwatch, alarm clock, an anchor watch, and it even contains an anti-theft message. With all that the Northstar 7000 does, it draws less than 18 watts of power.

For further information,

Write 22 on Reader Service Card

ELECTRO-NAV



The Saturn satellite communications terminal distributed by Electro-Nav, Inc. of Elizabeth, N.J., furnishes fast contact, round-the-world range, clear reception, and economical operation. It handles telephone communications, telex, facsimile, and high-speed data, to and from anywhere on earth.

Rugged antenna and terminal construction permits operation substantially unaffected by hurricane force winds and heavy rain, at a temperature range of −40 to +65 C, even when a ship is rolling as much as 25 degrees in each direction. The terminal and power supply fit into any standard radio room console, reducing clutter.

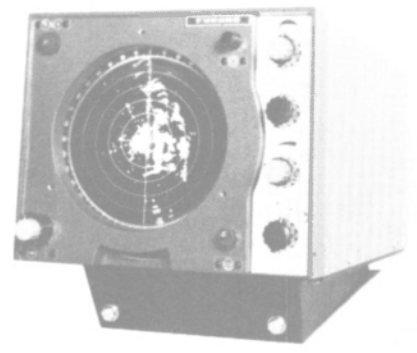
All connections are standard two-wire. This permits location of telephone jacks anywhere aboard ship, with full flexibility for locating telex and data and facsimile equipment. Saturn may also be wired to a ship's switchboard, allowing calls to be transferred within the ship. Saturn is manufactured by EB, one of Norway's foremost marine communications companies.

For further information,

Write 23 on Reader Service Card

FURUNO

The all-new Furuno FR-240 Mk II radar provides all the performance features needed by the commercial operator, with styling and price ideal for smaller vessels. Like all Furuno radars, the 240 offers outstanding performance with big-ship features such as dual pulse lengths for sharp target definition at any range, a solid-state front end for long crystal life, and ultra-high sensitivity.



Six range scales — from ½ to 24 nautical miles — are standard along with highly efficient sea and rain clutter controls. The display unit features a bright 7-inch CRT (12-inch with magnifier), and is fabricated from heavy-duty marine aluminum alloy to assure long life and reliable operation. The top unit weighs only 46 pounds, yet features a rugged cast aluminum housing and full

(continued on page 27)

Write **311** on Reader Service Card ►

RAYCAS.
Because safety at sea is no accident.

The world's finest Collision Avoidance system is also the most economical.

Will you collide? RAYCAS (Raytheon Collision Avoidance System) provides the answer in seconds, and helps you select the best evasive action.

RAYCAS combines a compact computer module with a Mariners Pathfinder® 16-inch Bright Display radar. This provides three unique installation options:

1. add only the RAYCAS module to an existing Raytheon 16-inch Bright Display radar;
2. add the RAYCAS module and 16-inch Bright Display plus adaptive interface to existing Decca, Sperry, or Selenia radar systems;
3. install the complete RAYCAS/Raytheon Bright Display Radar System.

Whichever you choose, you get a proven Collision Avoidance System that exceeds existing requirements . . . and cost less than other units.

Unmatched radar performance.

The Raytheon Bright Display presentation helps make RAYCAS the most effective Collision Avoidance System in the world.

In addition to direct daylight viewing, it features two-level video and automatic interference rejection. This provides the clutter suppression and noise-free picture so essential for reliable target acquisition and tracking. Proven 3 and 10-cm interswitch capability assures compliance with MARAD requirements for dual installations.

User-oriented presentation.

RAYCAS uses basic radar system video as input for the computer. The computer-generated collision avoidance symbols are then electronically superimposed directly on the Bright Display radar picture. As a result, observers can use familiar radar procedures assisted by target vectors, points of potential collision and other anti-collision data.

RAYCAS features.

- *Relative-motion Display:* Centered or 70% off-centered with course-up or north-up.
- *True-motion Display:* Own ship moving across scope with course-up or north-up.
- *Target Acquisition:* Manual or automatic with fixed and adjustable guard zones.
- *Tracked Targets:* Up to the 20 most dangerous targets.
- *Target Vectors:* Indicate true or relative courses and speeds; adjustable time base helps predict future position.
- *Target Trails:* Indicate target's past position and course.
- *Dangerous Targets:* Automatically selected by pre-set CPA (Closest Point of Approach) and TCPA (Time to CPA).
- *Points of Potential Collision:* Automatically displayed.
- *Digitally Displayed Data:* CPA and TCPA; own ship's speed and course; target's range, bearing, speed, and true course; own vector length; vector time; BCR (Bow Crossing Range) and BCT (Bow Crossing Time).
- *Trial Maneuver:* Scope displays results of own ship's trial course and speed changes.
- *Visual and Audible Warnings:* Dangerous target, target in guard zone, equipment fault, trial maneuver, and target lost.
- *Automatic Drift Correction:* Computed by tracking on fixed navigation aid.
- *Navigation Lines:* Scope presentation of 8 lines for fairways.
- *Brightness Controls:* Separate adjustments for radar and computer video.
- *Performance Monitor:* Manual or automatic monitoring of radar performance.

Two-year warranty.

The American made RAYCAS, like the more than 5000 Raytheon Dual 3 and 10-cm Radars now in service, is already a proven performer. Installations have been made on all types of vessels from coastal ships to VLCC'S.

RAYCAS has a two year limited parts warranty. On board service is free for one year within a fifty-mile radius of any of our U.S. Dealers and worldwide service network in major ports everywhere.

For more detailed information contact the Raytheon Marine Company office nearest you.

Raytheon Marine Company
676 Island Pond Road
Manchester, New Hampshire 03103 U.S.A.
Telephone: (603) 668-1600
Telex: 94-34-59

Raytheon Marine Sales And Service Company
Siljangade 6
DK-2300 Copenhagen S
Denmark
Telephone: (451) 57-06-11
Telex: 31473 RAYCO DK

Raytheon Marine Sales And Services Company
Mianto-Ise Bldg. 3F
3-12-1, Kaigan-Dori
Naha-Ku, Yohoham, Japan 231
Telephone: (045) 212-3633

Raytheon Marine And Service Company
Millard House
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Cutler Street
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RAYTHEON

28th/68th

Twenty Eighth Towboat for Midland

"28/68" is a successful combination. For Midland Enterprises, Inc., the 6000 HP Hydrodyne towboat M/V Midland marks the 28th towboat purchased from St. Louis Ship. It also marks the 68th HYDRODYNE towboat built by St. Louis Ship since introduction of the superior Hydrodyne Hull form and rudder configuration in 1965, and the *290th* towboat built to date by St. Louis Ship.

The Midland measures 138' x 44' x 11'. It was chosen by Midland Enterprises to be the first new boat in its growing fleet to exhibit the company's new color scheme. Painted gleaming white with red hand rails and trim, it bears the distinctive Eastern Gas and Fuel stack logo. St. Louis Ship is proud to be part of this long and successful association with Midland. 28 towboats are a lot for one customer. "28/68" is a strong testimonial to the performance, reliability and push-power of our exclusive Hydrodyne Hull design. St. Louis Ship quality at competitive prices, produces *value* for our customers. And value increases profits over the long term. We will welcome an opportunity to show you the many benefits of Hydrodyne design. Call us at (314) 638-4000.

Sixty-Eighth Hydrodyne Towboat Built by St. Louis Ship

ST. LOUIS SHIP

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Division of Pott Industries Inc.—An HNG Company

Navigation/Communication Equipment Review — Furuno

(continued from page 24)

3-foot SWG radiator. The built-in transceiver puts the full 3-kw peak power right at the antenna for sharp echo returns under all sea and weather conditions.

Installation of the FR-240 is simple. The wedge base permits display mounting on tabletop, bulkhead, or overhead. Each radar is provided complete with installation kit, viewing hood with integral magnifier, and a spares kit. Normal operation is from 12, 24 or 32 volts dc at a power drain of only 80 watts.

Furuno also manufactures a high precision ADF, the FD-120; an ADF for small craft, the FD-171; an automatic VHA direction finder, the FD 521; an all electronic Loran navigator and video plotter, the LC 30 receiver/processor and the GD 101A CRT plotter; a high-performance radar, the FR-360; a new dome type radar, the Model 1600; and the Series Seven and Ten radar family.

For further information,

Write 24 on Reader Service Card

HENSCHEL

Henschel Corporation, Amesbury, Mass., designs, develops, and manufactures ship control and interior communication systems and equipment for naval and commercial vessels. Commercial marine products include engine order equipment, throttle controls, bell loggers, digital master clocks, shaft and rudder indicators, sound-powered telephones, audible signals, alarm/indicator panels, automatic whistle timers, and fire alarm systems.

Henschel's naval product lines are ship control consoles, throttle controls, order/indicating equipment, digital indicators and master clock systems, ship's course indicators, synchro signal amplifiers, electrical hardware, switchboards, and submarine steering/diving instrumentation. Recently developed products use microprocessors and the latest solid-state synchro conversion technology. All products are sold worldwide. Manufacturing plants are located in Massachusetts, Oklahoma, and Louisiana.

For further information,

Write 25 on Reader Service Card

HOSE-MC CANN

In the early 1930s, it was unheard of to have a reliable interior communication system aboard ship until two marine electricians originated the world's first sound-powered telephone system for marine use. The originators, **Charles G. Hose** and **Thomas J. McCann,** were the founders of the Hose-McCann Telephone Company, Inc. Together they pioneered the use of sound-powered telephones to be a safe, reliable, and rugged communication system.

Now, more than 45 years later, Hose-McCann is proud to continue in its tradition as the leader in the field of marine interior communication equipment. Other Hose-McCann products include fully automatic dial telephone systems, rudder angle indicators, navigation light panels, engineer's

(continued on page 29)

The best doesn't cost any more any more

In the next few months, you'll be hearing a lot about DEBEG communication and navigation equipment.

To begin with, DEBEG quality is world renowned. You won't find more respected electronics as judged by the toughest high seas critics in the world. Secondly, we offer one of the broadest ranges of marine electronics available from a single supplier, everything from VHF radio to satellite navigation. Next, we offer service in over 200 ports worldwide. Then there's delivery. Aside from the fact that we're in an excellent delivery situation right now — from the U.S. and abroad, we're expanding our U.S. production operations within the next few months.

The Best of The Best

We've saved the best for last. Despite its quality, DEBEG equipment frequently costs less. Moreover, we want your business now, so there's never been a better time to negotiate. So take a look at our openers, the 2000 main receiver and the 2340 watch receiver, and let's talk. Call or write:

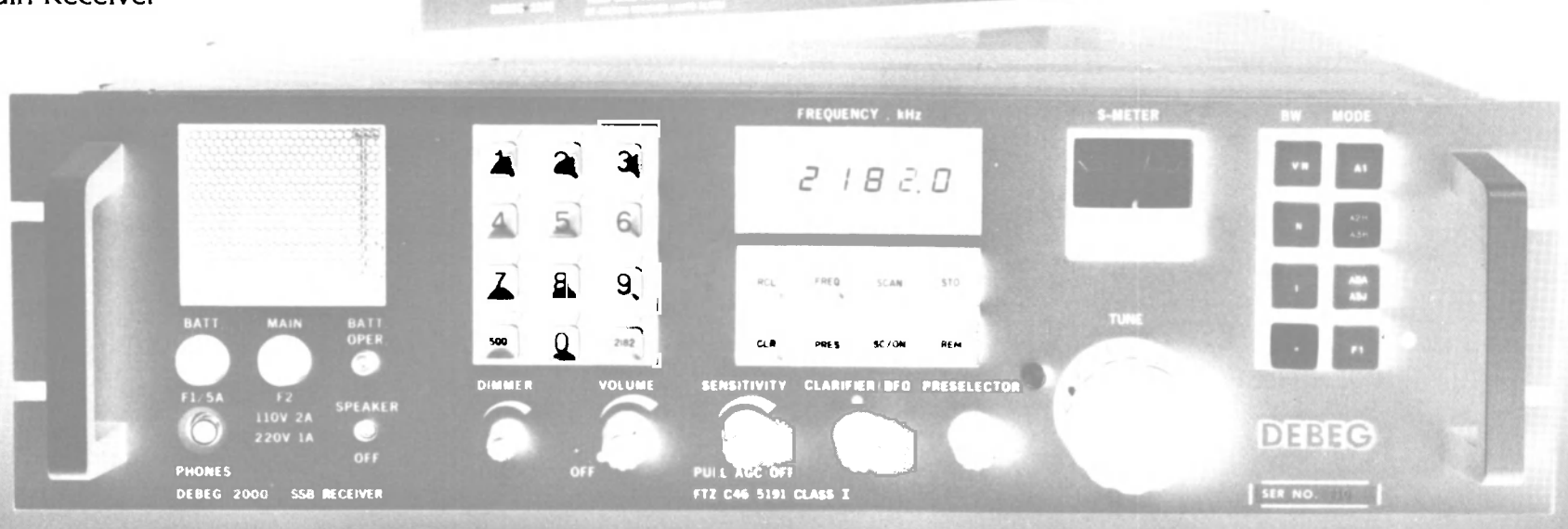
Bob McCarthy, DEBEG Marine Inc., 10 Manor Parkway,
Salem, N.H. 03079. (603) 893-2004.
Telex: 951 204 DEBEG USA.

DEBEG

DEBEG 2340
Watch Receiver

FCC APPROVED.

DEBEG 2000
Main Receiver



DEBEG 2000 **Main Receiver**

- 10kHz-30MHz.
- Fully synthesized.
- 30 frequencies can be stored.
- All modes and selectable filters.
- Scanning of pre-programmed frequencies.
- Meets international standards and frequencies.

DEBEG 2340 **Watch Receiver***

- Permanent watchkeeping on the international distress frequency of 2182 kHz.
- Three pushbutton selectable modes: Mute, 2-tone filter and normal.
- Automatic switchover to normal mode on receipt of a distress or warning signal.
- Optional connection of a clock and external signal devices.

Navigation/Communication Equipment Review — Hose-McCann

(continued from page 27)

signal and alarm panels, alarm bells, and associated Mil-Spec items.

New products by Hose-McCann include a variety of bells, buzzers, horns, sirens, telephone equipment, and accessories manufactured in accordance with the latest Military Specifications.

For further information,
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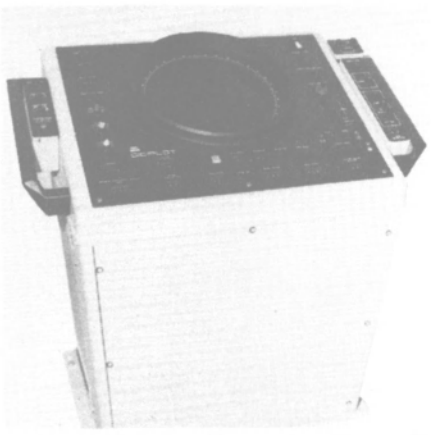
IOTRON



The Digiplot line of automatic radar plotting aids is manufactured by the IOTRON Corporation of Bedford, Mass. IOTRON was one of the pioneers in the development of collision-avoidance equipment, and has specialized in this field for more than 10 years.

From the very beginning, IOTRON was concerned with meeting the mariner's real requirements for radar plotting, and its equipment has always been based on this requirement, not on a minimum standard developed by a regulatory agency. This philosophy, together with 1,250 ship years' experience in automatic radar plotting, has resulted in many important features to be found in the Digiplot line of collision-avoidance systems.

For example, Digiplot has a fully automatic target acquisition system. Some systems use "guard rings" that only acquire targets automatically at one or two ranges. Digiplot can automatically acquire targets wherever they appear within the unit's 17-mile tracking range. Other important features include an enclosed cooling system to prevent salt corrosion, a built-in training display to permit training at any time, choice of 20, 40, or 60 target tracking capability, and two-year warranty.

For further information,
Write 27 on Reader Service Card

ITT MACKAY

The ITT Mackay Marine MRU-35A(T) radioteletype console is a complete high-frequency radioteletype, radiotelegraph, and radiotelephone communication facility. It provides a choice of operating modes: F1 for direct printing radioteletype, A1 for radiotelegraph, A3H for reception on conventional AM receivers, A3A for reception by public coast stations, and A3J for reception on single-sideband receivers.

The MRU-35A(T) features synthesized frequency control that provides 220,000 highly stable transmitting and receiving frequencies in the 2 to 25.11 mHz range. The transmitter combines an advanced crystal oscillator and solid state synthesized exciter with a modern, manually tuned linear amplifier to provide large channel capability, economical operation, and excellent performance. Rapid frequency changing and tune-up are achieved by the simplified and conveniently grouped operating controls.

For further information,
Write 28 on Reader Service Card

JAPAN RADIO

Japan Radio Company, Ltd. (JRC) has more than 65 years of experience in producing a broad range of marine electronics. JRC can draw on its experience and knowledge from building all types of marine electronics and produce sophisticated satellite communi-

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◄ Write 475 on Reader Service Card
Write 490 on Reader Service Card ►

Navigation/Communication Equipment Review — Japan Radio

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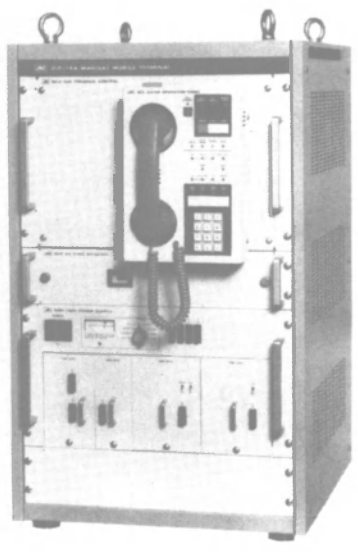


cations to meet the marine environment.

A significant portion of the JRC budget is spent on R&D to insure that the latest in world technology is used in its system designs. The JUE-15A MARISAT terminal represents the third generation of type-accepted terminals from JRC, and is indicative of the JRC dedication to continued excellence.

For quality control, the JRC Standardization Board continually evaluates every component used in the JUE-15A by applying some 721 criteria to the selection, testing, and evaluation process. The JUE-15A Quality Control Board examines the productions through application of over 407 individual criteria in 12 major production steps — from initial planning to after-sales service.

The JUE-15A specifications are meant to exceed the nominal specification issued by MARISAT and INMARSAT; a clear example is the actual capabilities of the JUE-15A's stabilized antenna tracking system.

Reliability at sea is of crucial importance to any shipowner, and JRC considers it as a major design objective. Mean time between failure and mean time to repair are crucial considerations and must always exceed to industry norm before production is considered. JRC maintains one of the world's largest service support networks.

The JUE-15A recently introduced such options as message secrecy polling and storage, and toll-ticketing. JRC also offers the standard options available in the industry. Additionally, the JUE-15A has a design flexibility to interface with new capabilities planned for the future, such as onboard data processors to link to shore management systems.

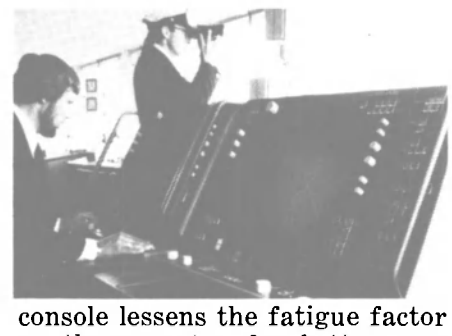
For additional information,

Write 29 on Reader Service Card

KRUPP ATLAS

The Krupp Atlas 8500 ACAS is said to be a revolutionary design in anticollision radar. Unlike other units, the 8500 ACAS combines a unique ARPA design with a 16-inch radar all in one console. This unit is the only ARPA to date to have met the strict specifications and testing requirements of the DHI (Deutsch Hydrographic Institute), IMCO, and FCC.

The 8500 ACAS is one of a series of new Atlas radars featuring a 16-inch daylight display and signal processing that has eight brightness levels. Tracking up to 42 targets is continual, with 20 targets actually displayed. Targets are never lost while switching ranges. The new stand/sit



console lessens the fatigue factor on the operator for better con-

centration. Standard features include off-centering, auto and manual STC, FTC, ranges 0.3-72N.M., VRM, EBL, performance monitor, Nav-lines (30), trial maneuver, visual and audible alarms, post tract vectors, manual and auto target acquisition, dangerous sectors, guard zones, self-checked onboard servicing, and log or doppler speed input.

For further information,

Write 30 on Reader Service Card

MAGNAVOX

The MX 1102 from Magnavox was the first commercially available satellite navigation system to use a microprocessor instead of a computer. With its advanced built-in program, the MX 1102 is so easy to use that it requires only a few hours of operator familiarization. The receiver, microprocessor, and CRT data display are housed in a single table-top, bulkhead, or overhead mounted unit that is no larger than a portable TV set. A small antenna/preamp mounts above deck in any relatively unobstructed location.

Navigation information is clearly displayed in digital form requiring no special charts or manual computations. Conventional SatNav data such as latitude, longitude, and Greenwich Mean Time (GMT) is supplemented with such information as distance trav-

eled, heading to steer, great circle and rhumb line courses, distance to destination, and time of next (and future) satellite fixes, all of which may be displayed upon operator command.

The MX 1102 was the first to have the outstanding feature of programmed tracking. This feature enables the satellite navigation system to distinguish between conflicting satellite signals and to lock only on signals from the satellite offering the best navigation fix. The result is about 10 percent more usable fixes, which occur at 40 to 90-minute intervals anywhere in the world, 24 hours a day. Between fixes, the system automatically dead-reckons and compensates for set and drift.

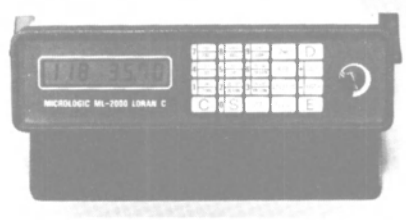
The system self-tests every two hours and, in the event of failure, identifies the easily replaced circuit module responsible for the malfunction. The self-test procedure may also be initiated manually.

Specifications for Class Nav N certification by Det norske Veritas have been met in the design and testing of the MX 1102. These include demonstrated accuracy [static accuracy to 0.05 nautical mile (RMS), and underway to 0.1 NM (RMS)], comprehensive environmental testing, routing self-test of all circuits, continuous monitoring of all functions, failure mode identification, and reliability analysis.

For further information,

Write 31 on Reader Service Card

MICROLOGIC



Micrologic is now delivering the new ML-2000 Loran C Navigator, said to represent a major advance in Loran C technology. The Chatsworth, Calif., company has produced Loran C equipment for commercial vessels since 1974. However, the ML-2000 is the first navigator from Micrologic that has been specifically designed for

(continued on page 33)

Photo from ABSTECH report shows no rust damage after 9½ years. When Fluid Film (A) was scraped away from ballast tanks, no oxidation was found on base metal (B).

Fluid Film Gel B	Exotic Coatings
None to minimum surface preparation	Sandblasting required
Can be applied to damp surface.	Dry surface required.
Needs only one coat	Two to three coats required
No curing time needed	48 hours curing time necessary
Over 400°F flash point during application.	110°F flash point during application
Three-year no-rust guarantee.	No other guarantees known
Chart comparison based on n-service ballast tank applications	

*This guarantee does not cover applications where our specifications were not followed or to in-service vessels where Fluid Film may have been applied over loose, non-adhering rust/scale. It also does not cover any area where the material was removed

FLUID FILM IS AVAILABLE WORLD-WIDE

EUREKA CHEMICAL COMPANY

World Headquarters 234 Lawrence Avenue, South San Francisco, CA 94080, Tel: (415) 761-3536, Telex: 349-465

Gulf Coast Division 9630 Clarewood Drive, Space C-5, Houston, Texas 77036, Tel: (713) 772-3772 • Mr. D. Petticrew

East Coast Division Rouse Tower, Suite 4000, 6060 Jefferson Avenue, Newport News, Virginia 23605 Tel: (804) 380-8220

WORLD-WIDE STOCKIST AND SERVICE CENTERS

Singapore/Brunei Lindeteves-Jacoberg (Far East) Pte Ltd., No. 1 Commonwealth Lane, P.O. Box 1058, Singapore, 3, Telex: 21421, Tel: 647191 • Mr. A. J. Cathery

Kota Kinabalu Lindeteves-Jacoberg (Sabah) Sdn Bhd., 5, Tanjong Lipat Road, P.O. Box 369, Kota Kinabalu, Sabah, Malaysia, Telex: 80031, Tel: 55611 & 55612 • Mr. Th. Broeksma

Kuala Lumpur Lindeteves-Jacoberg (M) Stn Bhd., P.O. Box 369, Kuala Lumpur, Malaysia, Telex. 37579, Tel: 775511 • Mr. J. G. Bouma

Japan Nichimen Company, Ltd., 15, Nakanoshima 2-Chome, Kita-Ku, Osaka 530, Japan, Telex: 63247, Tel: (06) 345-2111 • Mr. Y. Sawada

United Kingdom Highgate & Job Ltd., 60 Murray Street, Paisley, Scotland PA3 1QH, Telex: 77189, Tel: 041-889-3207 • Mr. John Hicks

Highgate & Job Ltd., 35 Regent Road, Liverpool, England L5 9TB, Telex: 629264 • Mr. M. C. Cameron

Federal Republic of Germany Alfred Hodt, Postfach 11 15 26, Hopfenmarkt 33, 2000 Hamburg 11, Federal Republic of Germany, Telex: 211088, Tel: (040) 362521 • Mr. B. Schultz

Sweden and Finland Henning Stenbeck AB, P.O Box 23, S 182 51 Djursholm, Sweden, Telex: 10270, Tel (08) 755-2775 • Mr. Bengt Bergstrom

Norway and Denmark A/S Bergstrom & Co., Gravdalsveien 14, Oslo 7, Norway, Telex 11772, Tel: 225872 • Mr. Arild Honne

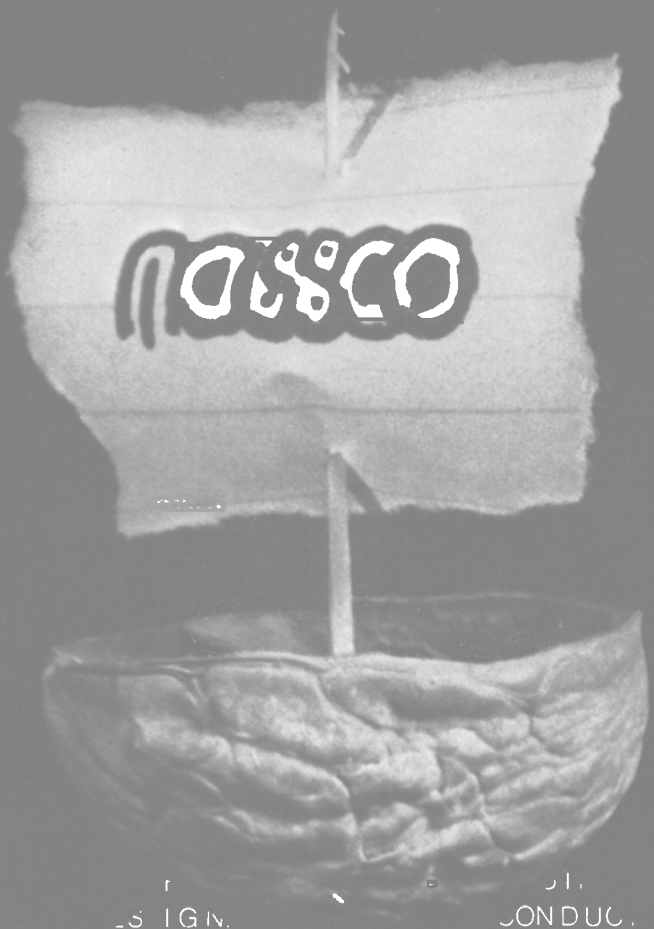
Rust is the cancer. Fluid Film is the answer.

FLUID FILM

EUREKA CHEMICAL COMPANY

Write **179** on Reader Service Card

IN A NUTSHELL



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SHOP. CA. S IGN. CONDUC. RETROFI.
NON-DESTRUCTIVE TESTING. INERT GAS SYSTEMS. RE ERATION. DATA PROCESSING. MATERIAL HANDLING.
COMPUTER SERVICES. QUALITY ASSURANCE. WELDING. FOUNDRY. UPGRADING TO USCG & IMCO STANDARDS.
SAND BLASTING. GAS FREEING. MACHINING. CONVERSIONS. DRYDOCKING. BOILER WORK. MIDBODIES.
PLANNING. PAINTING. SHEET METAL. ELECTRICAL. MACHINERY. GALVANIZING. ACCOUNTING. RIGGING.
SHIPBUILDING. PIPING. LAYOUT. SHIP REPAIR. BOILER SHOP ENGINEERING. MOLD LOFT.
OUTFITTING. MATERIAL CONTROL. PATTERN SHOP. CARPENTRY. DESIGN. PRODUCTION CONTROL.
ENGINEERING. MOLD LOFT OUTFITTING. MATERIAL CONTROL. PATTERN SHOP CARPENTRY.

nassco

A MORRISON-KNUDSEN COMPANY

NATIONAL STEEL AND SHIPBUILDING COMPANY Harbor Dr. and 28th St., P.O. Box 80278, San Diego, CA 92138

Navigation/Communication Equipment Review — Micrologic

(continued from page 31)

small vessels. Naturally, the commercial operator who is at sea daily has more time to learn about his complex equipment. The smaller craft owner usually requires a unit that is easy to master.

Micrologic's ML-2000 eliminates the complexity of navigation primarily by using a color-coded keyboard that simplifies the numerous functions of each key. The liquid crystal display describes which function is in operation. It is also back-lighted for optimum night viewing.

From a navigation standpoint, the ML-2000 computes and displays latitude and longitude; range and bearing to a destination; cross track error and time-to-go along a great circle path; as well as ground speed and true course. Ten waypoints are provided with a full memory, even when the power to ML-2000 is turned off. The unit has an arrival alarm feature, an audio alarm that sounds when the vessel comes within a pre-selected range to a waypoint. When the vessel exceeds a pre-selected range from a waypoint, the anchor watch feature also sounds the alarm.

The only requirement to operate the ML-2000 is to enter the initial latitude and longitude with an accuracy of three degrees when the unit is installed. The ML-2000 will automatically select the transmitters, acquire the signals, measure the time differences and compute the navigational outputs. The ML-2000 will track up to five secondary transmitters as well as provide the signal-to-noise ratio and other diagnostic outputs.

The unit draws approximately one ampere at 10-18 volts dc. The ML-2000 is available in three versions: the Full-Function Navigator; the receiver only; and the receiver with time difference steering and 10-waypoint memory.

For further information,

Write 32 on Reader Service Card

NAV-COM

Nav-Com Incorporated is a systems engineering organization specializing in custom marine communication and navigation systems, located in Deer Park, N.Y., and doing business worldwide. No undertaking is too small or too large, but all undertakings are done on the basis of quality being the guiding factor. Such systems range from the installation of new equipment on existing vessels to the engineering, design, installation, check-out, and continuing support of large computer - controlled communication and navigation electronic suites on the most sophisticated of new vessels.

Nav-Com represents and thoroughly supports the products of the finest manufacturers of marine electronics equipment, which includes such firms as Magnavox, Harris, Krupp Atlas, Motorola, Furuno, Texas Instruments, Philips, Simrad, CAI, Racal-Decca, Alden, and others.

The application of computers and processors to simplify the control of diverse equipment and to organize large amounts of information is one of the exciting new fields Nav-Com is pioneering in the marine industry.

For further information,

Write 33 on Reader Service Card

NAVIDYNE

The featured exhibit of Navidyne Corporation of Newport News, Va., at the RTCM Conference in Memphis April 27-29 will be the new ESZ-8000 satellite communicator. This is said to be the first Marisat/Inmarsat termi-

(continued on page 34)

◄ Write **279** on Reader Service Card

Navigation/Communication Equipment Review — Navidyne

(continued from page 33)

nal that incorporates a completely integrated CRT display in a compact operator's console, thus providing unprecedented versatility and operating simplicity.

The ESZ-8000 has been designed to accommodate future growth. Optional features, such as data interfaces for shipboard sensors, can be added by simply inserting additional circuit boards in extra slots built into the central electronics unit. In addition to this new satellite communications terminal, Navidyne manufactures the well-known ESZ-4000 satellite navigator and ESZ-7000 Loran C navigator.

For further information,
Write 34 on Reader Service Card

NORCONTROL

The Norwegian marine electronics manufacturer Norcontrol (A/S Kongsberg Vapenfabrikk) will introduce a new collision-avoidance system, DataBridge 7, during Nor-Shipping '81 in May. The system is designed primarily to meet special legalized specifications conforming to IMCO recommendations and MarAd Standard (USCG). However, it contains a number of technical advances that indicate that considerable practical navigational experience has influenced the final design.

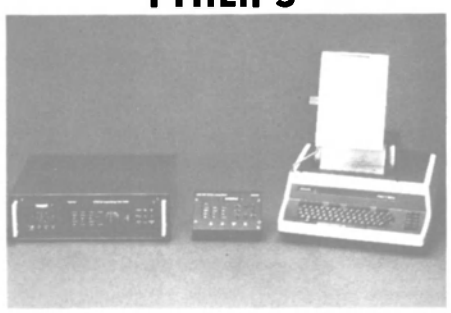
Norcontrol claims that the system represents three generations of technical expertise and 10 years of experience in navigation and collision-avoidance systems. Norcontrol's experience stems from 300 onboard installations, and was in 1969 the first to install a collision-avoidance system on a merchant vessel.

The DataBridge 7 provides audio and visual warnings whenever a target exceeds "closest point of approach" and "time to closest point of approach" limits selected by the operator. It features an enhanced intensity daylight display eliminating the need for cumbersome hoods normally required on radar displays. The daylight radar displays course-up, north-up, or head-up modes on a 16-inch PPI screen.

A centrally located alpha-numeric display is easily read by the navigator during traffic assessment, while surrounding controls are logically grouped for effortless selection. The DataBridge 7, as its predecessor DB-4, maintains a continuous track of targets during own-ship maneuvers. It is also provided with a navigational sub-system that is able to track fixed targets, perform dead reckoning, drift calculations, and display fairway lines.

For further information,
Write 35 on Reader Service Card

NORTH AMERICAN PHILIPS



The Philips STB-750 Mark II Teleprinting-Over-Radio (TOR) Marine Communications System is an advanced microprocessor-controlled system that provides low-investment, worldwide marine communications. The Mark II fulfills every requirement of the latest CCIR Recommendation 476-1 to assure reliable, error-free private or broadcast communications. The System includes a heavy-duty, low-noise Philips PACT teleprinter ideally suited for quality marine application. A special PACT teleprinter provides traffic monitoring and/or transmission from remote locations such as the bridge. Remote system control is possible with a remote control box CBX-750.

For further information,
Write 36 on Reader Service Card

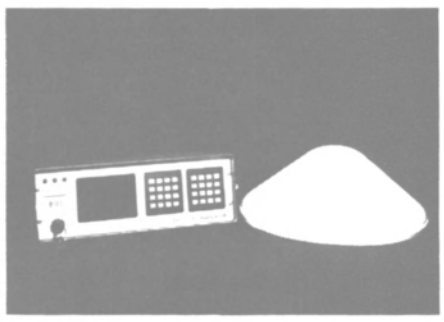
NORTHERN RADIO

The introduction of a fully synthesized single-sideband transceiver with worldwide communications capabilities has been announced by Northern Radio Company. According to the Redmond, Wash., manufacturer, the N850 features a fully synthesized, microprocessor-controlled frequency selector as well as a thumbwheel selection of 130,000 frequencies with ITU frequencies stored in memory.

It also has a speech processor with what the manufacturer terms 'instant talk," which will transmit voices in a whisper. Other standard features include automatic voice-detecting super squelch, LED digital readouts, 150-watt PEP output, plus solid-state modular construction for durability and ease of repair.

For further information,
Write 37 on Reader Service Card

RACAL-DECCA



Racal-Decca's DS4 Satellite Navigator uses the signals from the U.S. Navy Navigation Satellite System (TRANSIT) and provides the mariner, at low cost, with a fully comprehensive satellite navigation capability. In line with the Racal-Decca reputation for navigational aids that combine high accuracy with ease of use, the DS4 operates automatically once the user has carried out a simple setting-up sequence. Six "pages" of navigational data are available for display giving position, time, date, heading, speed, last satellite fix, future satellite alerts, and multiple waypoint information.

The DS4's receiver, processor display, and interfaces are housed in a single, compact unit that can be mounted tabletop, bulkhead, or overhead, and its associated UHF antenna is lightweight and easy to install. The unit will operate from ac supply (110-220 volt or 220-240 volt, 50/400 Hz), or dc (12-36 volts) and consumes approximately 20 watts. An internal battery can sustain operation for up to 15 minutes in the event of a power supply interruption. The DS4 accepts inputs from most standard types of speed log and gyrocompass or, as an option, from a magnetic heading reference. There is also an output for an optional printer for recording position and other data.

Sequential prompting by the system's powerful microprocessor enables settings of date, approximate time, and position to be correctly keyed in and thereafter the operation is fully automatic. Signal acquisition locking and message synchronization are clearly displayed, and symbols indicate the quality of the incoming data as the satellite pass proceeds. The data is edited for satellites having too high or too low an elevation angle, and also by reference to the measured number of doppler intervals.

The unit's "position" display presents current DR position in lat lon, updated internally every minute, together with time, date, speed, heading, and, during a satellite pass, signal and fix quality. The next useable satellite pass correctly adjusts the DR position. Up to 10 way points can be nominated, to which the computer calculates distance and course to steer in great circle or rhumb line as required. Offset due to drift is calculated once tide or ocean current data has been set in.

Other equipment for which the company is well-known includes Radar, Loran, Track Plotter, Autopilot, Radio, Sounders, and Fish Detectors.

For further information,
Write 38 on Reader Service Card

RADAR DEVICES

Radar Devices, Inc., San Leandro, Calif., recently announced the introduction of their Automatic Radar Plotting Aids (ARPA). The RDI ARPA Series I and Series II Automatic Radar Plotting Aids are designed to be interfaced easily with almost any modern marine radar equipment presently installed on vessels. The units are said to be cost-effective and designed for optimum performance. RDI ARPA systems are designed to meet all U.S. and international regulations without the necessity of changing the entire radar system.

The RDI ARPA Series I contains a patented technique that presents collision-avoidance symbology on virtually any existing radar display. This eliminates the high cost of a separate 16-inch radar display, and is the key to its cost-effectiveness. The unit can be installed quickly and economically, and provides the utmost in flexibility and ease of operation, according to RDI.

The RDI ARPA Series II may be added to one or two existing radars even if they are less than 16 inches, and will meet the standard for Automatic Radar Plotting Aids where targets are acquired automatically. The ARPA Series II incorporates a 16-inch bright display PPI, which will serve as a master indicator should the radars already installed on the vessel be inadequate. It also provides options for future expansion by addition of target memory and navigation functions by means of simple field modifications.

Deliveries on ARPA Series I equipment are scheduled to begin in June 1981 and ARPA Series II equipments in December 1981.

For further information,
Write 39 on Reader Service Card

RAYTHEON MARINE

Raytheon Marine Company, Manchester, N.H., U.S. manufacturers of Bright Display 12-inch and 16-inch radar and collision avoidance systems, have announced that through the end of March 1981, they will have shipped more than 440 Raytheon RAYCAS collision avoidance systems to vessels flying the flags of the major maritime nations of the world.

The Raytheon RAYCAS collision avoidance system meets all requirements of the U.S. Coast

Guard and IMCO for automatic radar plotting aids. The Federal Port and Tanker Safety Act will require that all vessels 10,000 gross tons and upward, carrying dangerous liquid cargoes and entering U.S. ports, must be equipped with this type equipment by June 30, 1982.

In addition to meeting the requirements of the U.S. Coast Guard and IMCO, the Raytheon RAYCAS provides the ship's navigator with several more features enabling the navigator to pilot his vessel with extreme accuracy and in complete safety without fear from collision and groundings. The RAYCAS system was designed to be used with Raytheon Bright Display radars. Howeverthe RAYCAS can be interfaced to operate with other marine radar systems.

For further information,

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RAYTHEON OCEAN SYSTEMS

Raytheon Ocean Systems Company comprises four business areas: oceanographic instrumentation and recorders, maritime systems, offshore oil instrumentation, and oceanographic systems and services. Within the ocean instrumentation group, bathymetric systems are a main component, providing echosounding, seismic profiling, sonar printouts as well as laboratory applications.

The maritime system products include multi-point digital loading computers and doppler speed logs. The offshore oil instrumentation main product is a RATAC® backup acoustic command system for emergency activation of blowout preventers. Oceanographic systems and services offer deepwater finite amplitude depth sounding, biological chemical surveys, hydrographic surveys, geophysical and geological surveys, OCS hazard surveys, data systems, bathymetric surveys, current monitoring, circulation and diffusion measurements, plume mapping, and predictive modeling.

For further information,

Write 41 on Reader Service Card

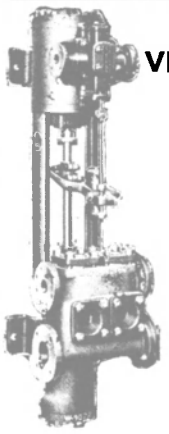
RCA SERVICE

RCA Service Company, Cherry Hill, N.J., has announced the introduction of a new VHF/FM radiotelephone to its marine equipment line. The Model 8080 is a fully synthesized marine radio-

telephone that has been designed specifically to meet the needs of

(continued on page 40)

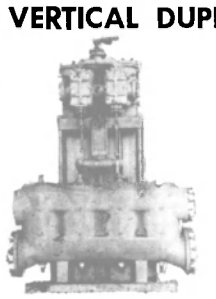
PUMPS



WORTHINGTON VERTICAL SIMPLEX PUMPS

8 to 20 GPM—up to 350#. Also suitable for small boiler feed service. Steam WP 220# and 10# exhaust.
for Liberty Ships EC-2 & Victory Ships VC2, AP2 & AP3. (Fuel oil service) Liquid capacity from 7½ x 4 x 10—3" suction—2" discharge—1¼" steam—1½" exhaust. OAH 5'2"; OA depth 23"; OAW over air dome 2'2". Weight about 800#. Suitable

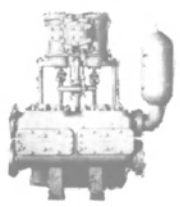
WORTHINGTON 16" X 14" X 18" VERTICAL DUPLEX STRIPPING PUMP



1400 GPM @ 110 PSI — suction lift 11.5 ft. — steam back pressure 15 lbs. 14" Suction — 10" discharge — 2½" steam — 4" exhaust. Overall width 6'8" — overall height 9'1½" — depth 3'9½". Wt. approx. 10,000 lbs.

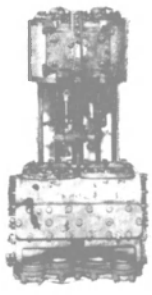
RECONDITIONED 1980
READY TO GO

STEAM DRIVEN VERTICAL DUPLEX FIRE & GENERAL SERVICE PUMPS



10 X 11 X 12 — Worthington — 560 GPM @ 125# G. 8" Suction — 6" discharge pumps bronze fitted.

8" X 8" X 10" VERTICAL DUPLEX PUMP

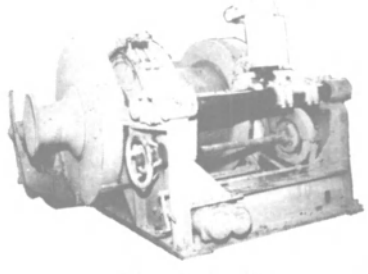


Hendy design Suction 8" — discharge 6" — 160 GPM @ 100 PSI.

PRACTICALLY NEW

$4500

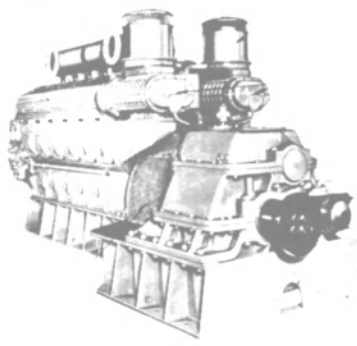
100,000 LB. ALMON JOHNSON Constant Tension Mooring Winches



In very good condition. Series 232 mooring & anchoring winches. Automatic self-tensioning. Wide range from 100,000 lb. line pull @ 10 FPM to 26,000 lbs. @ 400 FPM. Gypsy line pull @ 12,000 lbs. @ 25 FPM. Drum declutchable through spiral jaw clutch for free spooling. Driven by 50 HP 230 VDC motors — Westinghouse CK — 575 RPM — ½ hour — 75°C rise — stab shunt — 181 amps. Max. RPM 1900 — Cutler-Hammer brake — 18" — type NM. Complete with magnetic control panel, resistor banks & remote control pedestal and mounted master switch.

MATCHED PAIR GM 12-567A 900 HP DIESEL ENGINES

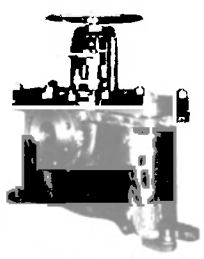
with Falk reverse & reduction gear



ENGINE: GM 12-567A—8½X10—VEE type—2-cycle—747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk Air Flex—reverse & reduction—2.48:1 forward—2.52:1 reverse.

4-BLADE LST BRONZE PROPELLERS

Starboard — 7' diameter — pitch constant 4.699: Bore tapers from 6⅛" to 4$^{53}/_{64}$". 14½" taper equal to 1"/foot on diameter. U.S. Navy reconditioned. Average weight 1760 lbs.



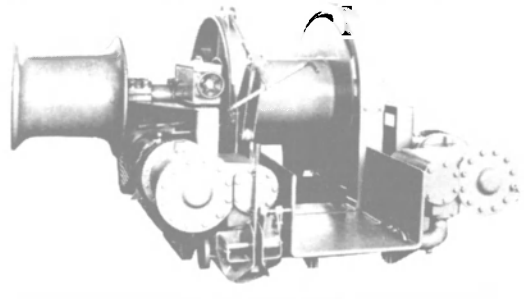
NEW–UNUSED 3" STEEL DUPLEX STRAINER

300 Lbs. Flanged

With hand wheel. Mfg. by Derbyshire. Flange to flange 14 3/8"—width 26"—center of hole to base 11". Fine steel mesh basket. Working pressure 300 lbs. 6 3/4" bolt circle with 8 bolt holes.

STEAM MOORING WINCHES

12" x 14" — STEAM OR AIR DRIVEN
with foot brake & declutchable gypsy head
20,000 LBS @ 100 FPM—FIRST LAYER



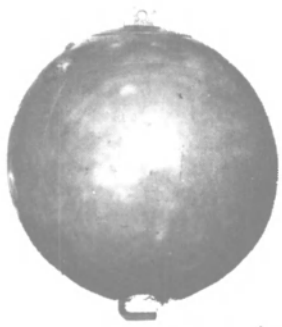
ALSO HANDLES 16,000 LBS @ 150 FPM OR 50,000 LBS @ 8 FPM

Drum will show 1500 ft of 1½" wire in 9 layers. Steam inlet 3½" — 4" exhaust — 171 PSI working pressure. BASE DIMENSIONS: 6' x 6' 3½" — overall 8' 4½" wide x 9' long. Mfg by Friedrich Kocks — Bremen, Germany. Recently removed from ARCO "Challenger".

ALSO IN STOCK

12" x 14" Double Gypsy Unit

ALL UNITS CAN BE DEMONSTRATED RUNNING



NEW — UNUSED SPHERICAL MOORING BUOYS

About 58" diam. With tieplates top & bottom. Est. wt 680 lbs each. 120 lbs submergence

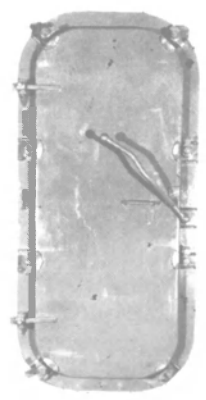
CYLINDRICAL BUOYS

3 Available — 5 ft X 9 ft — with wood bumpers

WORTHINGTON 10 X 7 X 10 BRONZE BALLAST & FIRE PUMP

300 GPM—100 LBS

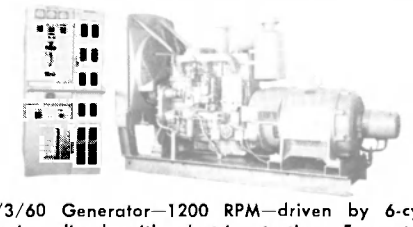
Ex-T2 Tanker. 150 Lbs steam—10 in exhaust — 100 lb discharge. 6" suction — 4" discharge — 1½" steam — 2" exhaust. Overall ht 4'7½" — OAW 3' — Depth 2' 9".



QUICK-ACTING LEVER OPERATED WATERTITE DOORS

26" X 66"
8-DOG
Rights & Lefts

STANDBY GENERATOR CUMMINS 75KW 93.8 KVA DIESEL GENERATOR SET



440/3/60 Generator—1200 RPM—driven by 6-cylinder Cummins diesel with electric starting. Free standing switchgear.

$9750

PLEASE NOTE:

Our Marine Dept. & Warehouse is n
250 Scott St. at McHenry — Baltimo

KNOWN 'ROUND THE WORLD

THE BOST

313 E. BALTIMO

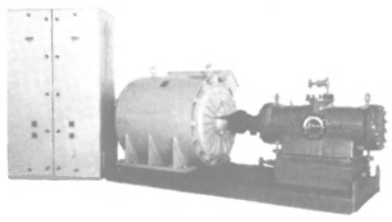
Main Office: (301) 5

CABLE: BOSIRON—BALTIMOR

700 G.P.M. @ 150 P.S.I.
NEW — UNUSED

MOTOR DRIVEN ROTARY HORIZONTAL PUMPS

WITH 4-SPEED 440/3/60 MOTOR

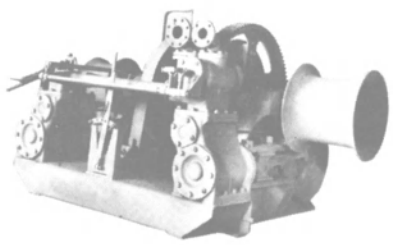


Inlet 8" — outlet 6". Powered by 4-Speed 440/3/60 motor. Motor is 100/75/50/37.5 HP — 1200/900/600/450 R.P.M. Motor has Cutler-Hammer control. Weight 10,000. Inquire for complete details.

9X12 2-SPEED ALL-STEEL STEAM & AIR DRIVEN WINCHES

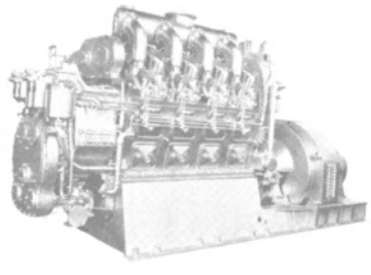
for use as General Service or MOORING WINCHES

20,000 LBS @ 110 FPM—7,450 @ 250 FPM



DRUM CAPACITY: 1250' of 1" wire in 9 layers or 2200' of ¾" in 12 layers. Weight 11,300 lbs. DRUM DIMENSIONS: 22" diameter—20" between flanges; flange diameter 40"; two 16" gypsies. DRUM BRAKE: Contracting band type — asbestos lining — foot operated. WINCH DIMENSIONS: 12' long—8' wide — 5' 10" high. Reconditioned by U.S. Navy. Equal to new.

GM 8-278A 350KW 440/3/60 DIESEL GENERATOR SET



GM 8-cyl. engine — 8½X10 — 2-cycle — Vee type driving 350 KW G.E. generator—440/3/60—600 RPM—430 KW 2 hours. 3 Units available. Your inspection invited.

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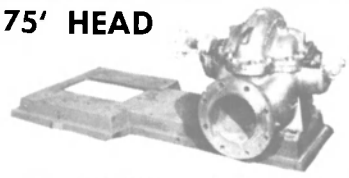
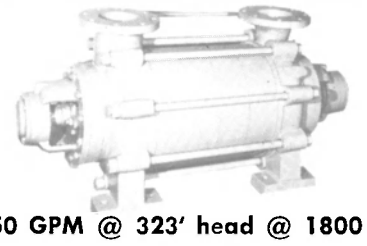
BRONZE 2000 GPM PUMP 75' HEAD



75' Head — 1750 RPM — mfg by American Well Works. Horizontally split case size 8X8. (50 HP motor required for pump capacity.) Frame 445. Supplied with 5'8"X 2'5" base.

$1775 EACH

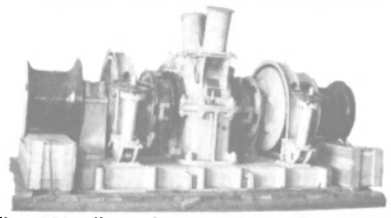
NEW — UNUSED NIJUIS FIRE PUMP



550 GPM @ 323' head @ 1800 RPM

$1975

NEW — UNUSED LINK BELT WINDLASS



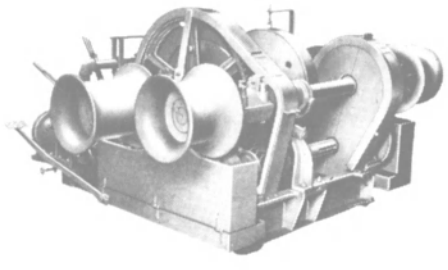
Handles 7000 lb anchors — 1⅜" windlass — 56" centers — 50 HP — 230 VDC — with controls and spares.

$8750 EACH

800 HP PROPULSION MOTORS AND CONTROLS

2 Available. 2-Bearing—800 HP—450 volts 3 phase 60 cycle — 1775 RPM — 1282 amps. Frame 2315S — mfg by Electric Machinery Co. — class B Insulation — with controls. Inquire for drawing.

7x12 10,000 LB AH&D CARGO WINCH



2-Speed — single drum — reverse throttle operation. LINE PULL: low gear 10,000 lbs — high gear 5,000. LINE SPEED: low gear 125 FPM based on 1st layer of 7/8" diam. rope — high gear 250 FPM based on 1st layer of 5/8" diam. rope. DRUM: 26" diam. — 20" long — 26" flange diam. Rope capacity of drum: 7/8" diam. rope in 6 layers — 650'; 5/8" diam: rope in 8 layers 1200'. Steam preassure at throttle 115 lbs. Operating weight 6450 lbs.

WALZ & KRENZER USCG APPROVED HEAVY SLIDING DOORS WITH FRAMES

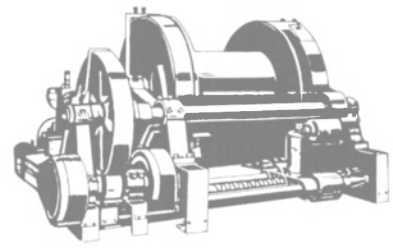
All Doors Bolted In And Easily Removed

- 1 36"x66" Horizontal hand mech. steel sliding door—complete with mechanical local & remote gear boxes
- 1 60"x78" Steel watertight sliding door. Complete with mechanical local and remote boxes.

LARGE STEAM TOWING ENGINE

9 X 10 TWIN ENGINE DRIVE

Air or Steam — 125/250 PSI



Heavy-duty Clyde with 36" diameter X 51" Face single drum. Flanges 68". CAPACITY: Up to 2800' of 2" wire rope. Normal line pull 40,000 lbs@ 50 FPM. Steam or air pressure required 125 to 250 PSI. Can be adapted to electric drive or increased steam or air pressure to a capacity of 82,000 lbs @ 20 FPM. Pawl holds 270,000 lb. pull from any layer. Equipped with level wind device. Approximate weight 30,000. DIMENSIONS: 12'6" wide—6'6" high. Write for details.

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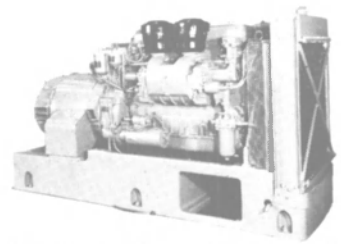
Large towing ring — 36" I.D.

60KW DIESEL GEN. SET

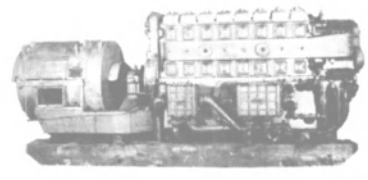
DELCO GEN. — GM 6-71 DIESEL



Delco 120 volt DC 500 amp stab. shunt 1200 RPM generator. Engine is GM 6-71 — heat exchanger cooled. Radiator shown is not included.

Reconditioned — Ready To Go.

300KW GM 8-268A 120/240 DC DIESEL GEN. SET



ENGINE: GM 8-268A — 6½ X 7 — 1200 RPM. Heat exchanger cooled. GENERATOR: Westinghouse 300 KW — 120/240 DC — shunt wound.

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FACTORY NEW NIJUIS 10" X 8" SPLIT CASE HORIZONTAL PUMPS

Best efficiency 3400 GPM @ 160 PSI — 1500 RPM or 5220 GPM @ 30 PSI — 1500 RPM maximum capacity. 4500 GPM @ 125 PSI — 1800 RPM. Requires 500 HP. 2000 GPM @ 110 PSI — 1450 RPM (using 6-V-71 engine reducing 8" to 6" suction).

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40KW EMERGENCY GEN. PANEL

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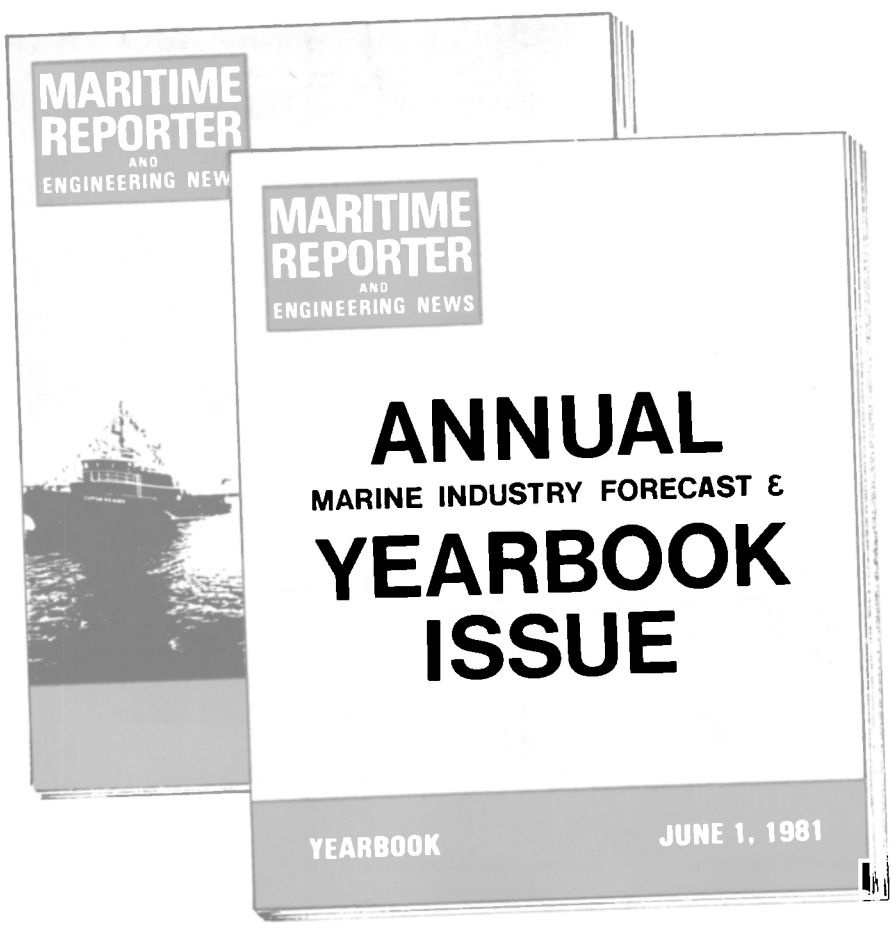

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This will be a true outlook issue...dealing little with the past... primarily with future predictions by leading marine industry experts of activities to come in all areas of the commercial maritime/offshore industry. Among the contents planned for this ANNUAL YEARBOOK ISSUE are...

- **U.S. SHIPBUILDING REPORT AND OUTLOOK**— Vessels building or on order in U.S. shipyards plus the outlook for the future.
- **U.S. NAVY**— A complete report - The present size and future prospects for a larger, more formidable U.S. Naval Fleet.
- **WORLDWIDE SHIPBUILDING OUTLOOK**— A view toward future ship construction levels in leading foreign yards.
- **OFFSHORE DRILLING**— The current picture on new rig and support vessel orders plus estimations of an even brighter future by key industry leaders.
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THE ADVERTISING LEADER In 1980, a larger number of advertisers placed more pages of advertising in Maritime Reporter than in the No. 2 magazine.

Navigation/Communication Equipment Review — RCA Service

(continued from page 35)

the most demanding marine environment, according to **Edward B. Campbell,** manager, industrial electronic services marketing, RCA Service Company. "It combines keyboard channel selection with automatic scanning and covers all U.S. and International Channels," Mr. **Campbell** said.

A key feature of the unit, he pointed out, is the programmable microprocessor that allows up to 20 channels to be automatically or manually scanned for traffic in particular situations, such as negotiating harbors patrolled by Vessel Traffic Systems. Other features include 25-watt transmitter output capability and a receiver design that assures crisp signals even in congested harbors.

"The 8080 is U.S.-built with integrated circuit technology and corrosion-resistant materials to withstand the most rugged marine conditions," Mr. **Campbell** said. "The unit is ideal for commercial fishing vessels, workboats, large yachts, and deepsea vessels."

For additional information,

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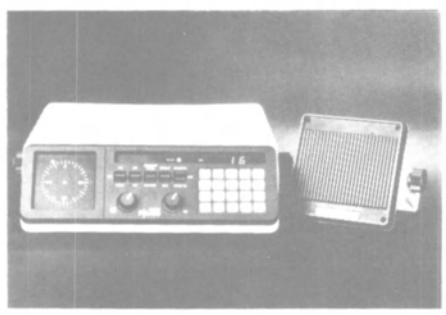
REGENCY ELECTRONICS



Regency Electronics, Inc., Indianapolis, Ind., has announced a new concept in Marine Direction Finders — the Polaris NC7100. The unique feature is a circle of 36 light-emitting diodes that scan for a VHF signal, then point to the position of a transmitter with plus/minus 5-degree accuracy. Two adjacent lights alternately flash to indicate a more accurate bearing.

The Polaris NC7100 can determine position by triangulating between two coastal transmitters. Or, it can get a bearing on coastal VHF marine or weather stations. All entries are made by just touching the back-lighted pressure pads.

The Polaris NC7100 uses a special dipole array antenna that is custom-designed with a circuit board that can detect direction and eliminate 180-degree errors, and it is built to hold up to 100-knot winds. Other features include a switch to hold the direction finder on the last bearing, memory lock, channel 16 switch, rugged external speaker, and channel 16 priority. A special direction-finding receive antenna is included.

For further information,

Write 43 on Reader Service Card

RF COMMUNICATIONS

The RF-2330 channelized ARQ system from Harris Corporation's

RF Communications Division is an advanced synthesized (transmitter / receiver), automatic error-correcting, radio teletypewriter system. A unique high-speed switch allows operation from a single antenna. The RF-2330 can be operated in either simplex or split channel (half-duplex) modes.

The RF-2330 ARQ terminal is a complete system that features 1 kw PEP or average, microprocessor control, switched simplex operation, high-frequency stability, and channelized full-frequency coverage. As a complete system, the RF-2330 includes all elements necessary for operation including the basic transmitter (RF-233), receiver (RF-530), HAARQ Modem (RF-3500), and antenna coupler (RF-1205). The teletypewriter is available as an option.

For further information,

Write 44 on Reader Service Card

ROBERTSON

The new Robertson AP-8 Autopilot is a full feature system designed for vessels from trawlers and large yachts to supertankers —and everything in between. Although it will operate from a magnetic compass heading reference, it is specifically meant to interface with the Robertson SKR-80 Gyrocompass. Both are manufactured by Robertson AS of Egersund, Norway, and Leonia, N.J.

The AP-8 consists of three units that can be mounted together in a bulkhead, overhead, or on the Robertson SS-3 steering station. The main panel unit has a sensitivity control, as well as rudder, counter rudder, and rudder limit control for fine tuning of autopilot function under any combination of wind, weather, sea state, ship loading, and steering characteristics.

This panel contains an off-course and system fault alarm that gives visual and audible notice if the autopilot system develops a fault or if the main gyrocompass and auxiliary magnetic compass differ by a preset amount. A compass selector allows the heading reference to be switched from the gyro to the auxiliary compass in case of trouble. The fault system monitors rudder feedback, voltage levels, and gyro input continuously for an almost completely fail-safe system. The panel also contains port and starboard rudder command indicators that light whenever the autopilot inputs the rudder actuator.

The AP-8 can be programmed to suit the characteristics of nearly any vessel. It is designed to meet and exceed the requirements of IMCO, West German DHI and Norwegian Maritime Directorate regulations.

For further information,

Write 45 on Reader Service Card

SCIENTIFIC-ATLANTA

The Scientific-Atlanta terminal, Model 3055M, Inmarsat Satellite Communication Terminal, gives a ship or an offshore facility at sea many of the same communications capabilities that businesses have enjoyed ashore for years. These capabilities include fast and dependable telex, telephone, facsimile, and data communications, including a 56 KBIT option.

Compact and simple to operate, the terminal consists of an antenna unit installed above deck, and electronics/power units installed below deck, the latter gen-

(continued on page 42)

Navigation/Communication Equipment Review — Scientific Atlanta

(continued from page 41)

erally in a radio room. The 3055M Terminal offers the below-deck electronics and power units in separate modular form, permitting greater flexibility for installation of the equipment in space-limited quarters. These units can be stacked and held in place by simple snap fasteners to form a compact console.

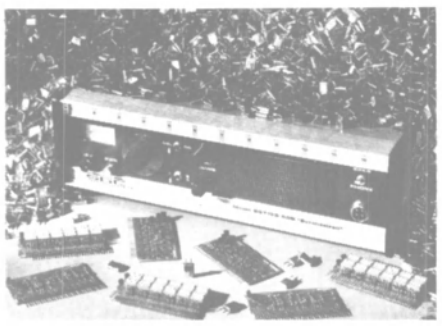
The terminal is based on the same proven design used in the earlier Model 3055 which Scientific-Atlanta has provided to Comsat General since the beginning of commercial Marisat services in 1976. The 3055M also incorporates many features designed to further improve reliability and performance. Options include Data Management Interface RS232C and/or IEE488, Remote Telephone, Telex. Prefabricated heavy duty masts are also available.

For further information,

Write 46 on Reader Service Card

SGC

SGC, Inc. of Bellevue, Wash., a manufacturer of sophisticated single-sideband radiotelephone equipment, has just announced the introduction of their newest



synthesized SSB product. Synthesized circuitry allows full channel programming of the frequencies desired with no expensive crystals to install or change later. The frequencies can be easily changed, if required, by simple diode programming. The Model SG-712S-36-18 meets the demand for 18 mHz frequency range coverage in the SSB market, while featuring a front panel meter for signal reading and VSWR, as well as forward output power in transmit. The unit produces 100 watts of convervatively rated power output, and has capability for 36 simplex or 12 simplex/12 duplex (or any combination) channels.

The SG-712S-36-18 SSB features SGC's exclusive quick-mounting tray for easy installation and serviceability. The unit is supplied complete with 50 ohms output for operation with an external antenna coupler or 50 ohm antenna, and is operational on 12 volts dc. Optional features include SGC's exclusive signal to noise ratio squelch, alarm generator, telephone handset, and dip switch programming boards.

For further information,

Write 47 on Reader Service Card

SIMRAD

Simrad designs and builds every piece of marine electronic equipment to meet the most stringent legal requirements of government agencies throughout the world. And Simrad reports it goes farther, making sure its electronics are accurate, reliable, tough, and easy to use.

Simrad's compact RW-105 watch alarm receiver keeps continuous watch on the 2182 kHz distress frequency. If another ship is in trouble, you'll hear it. The Armonk, N.Y., company also markets radars, Loran C systems, navigation echosounders, fish-finder systems, sonar, automatic direction finding equipment, and weatherfax.

For further information,

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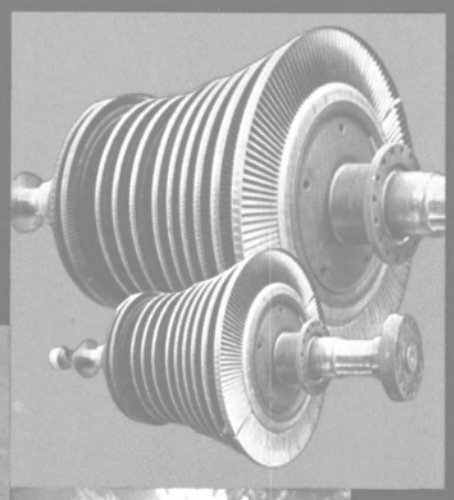
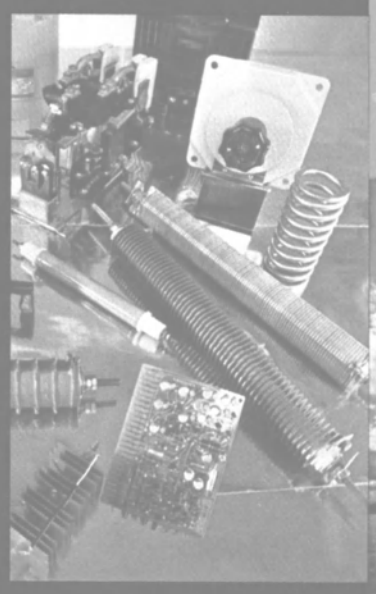
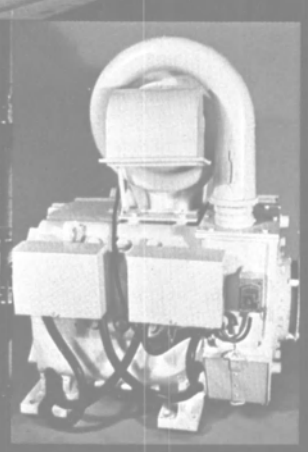
(continued on page 44)







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Navigation/Communication Equipment Review

(continued from page 42)

SI-TEX

A built-in navigational computer that converts Loran time differences (TDs) to latitude and longitude coordinates and performs a number of additional navigational functions, is the main feature of the new Model 757C just introduced by SI-TEX of Clearwater, Fla. In addition to Lat/Lon conversions, the microcomputer processes and displays vessel's heading (in degrees), bearing (in degrees) to selected destination/way point, cross track error (in hundredths of a mile), distance to go (in nautical miles), time to go (in hours and minutes), and vessel speed (in knots) over the ground.

The SI-TEX/Koden Model 757C also features four totally automatic notch filters that eliminate most forms of local interference and can be tuned manually to notch out in-band interference. Eight-position memory can store and recall eight separate Loran C positions in either TD or Lat/Lon mode. "Always on" memory feature retains entered chain number, secondary stations, and all eight memories even after receiver has been turned off.

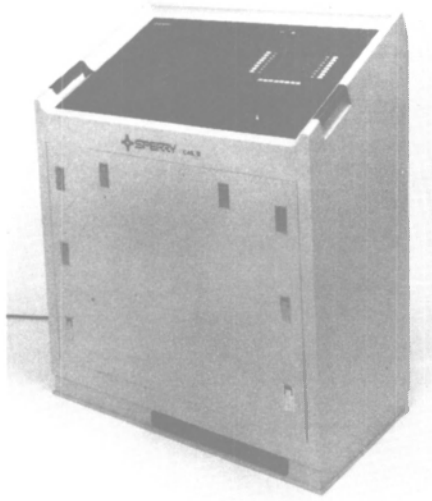
ComPuNav steering feature

can compute and guide the helmsman along a course to any one of seven programmable destinations/way points. While steering this line, any off-course deviation is displayed in an upper window. Display is in microseconds either left or right of track in TD mode and hundredths of a nautical mile in Lat/Lon mode. Distance to destination, time to go, vessel's speed, vessel's heading, course to way point, or elapsed time can be displayed in the lower window in the Lat/Lon mode.

For further information,

Write 49 on Reader Service Card

SPERRY



The Sperry CAS II system, introduced in 1979, is currently aboard more than 200 ships, and more than 500 Sperry collision-avoidance systems have been sold worldwide. The CAS II system allows ship masters to detect at a glance possible danger areas and steer to avoid them. Sperry recently developed a channel navigation option to the system, which allows chart data to be superimposed on the radar data, permitting precise, safe steering even in restricted waterways.

The Sperry division of Sperry Corporation is a leading manufacturer of commercial marine systems, and is a world leader in sales of collision-avoidance systems. Other marine product lines produced by Sperry include energy-efficient autopilots, radars, speed logs, steering gear, steering failure alarm systems, ship stabilizers, gyrocompasses, and engine monitoring and control systems.

The Sperry division, one of five

divisions of Sperry Corporation, is also a leading developer of systems and hardware for defense, and is the corporation's principal contributor of new technologies for land, sea, and missile applications. Its major products include combat systems, simulators, radar/sonar equipment, guidance and control systems, automated materiel handling systems, and traffic and transportation systems.

For further information,

Write 50 on Reader Service Card

TEXAS INSTRUMENTS

The TI 9900 fully automatic Loran C navigator manufactured by Texas Instruments Incorporated is a state-of-the-art device that packs a complete Loran C based navigation system into an attractively styled package the size of a major city telephone book. More than a Loran C receiver, the microprocessor-controlled TI 9900 displays the vessel's position directly in latitude and longitude coordinates, reducing user dependence on special Loran charts. The TI 9900 stores up to 10 way points. With single key presses, the mariner can read range and bearing and time to go at present speed to any way point, course made good from last way point, present average speed over the bottom, and cross track error relative to a selected rhumb line course between two way points.

Easily added to any TI 9900, the TI 9930 speech option speaks the navigational information in a clear, lifelike voice. The TI 9930 includes the industry standard output for Loran/autopilot interfaces as well as output for the TI 9920 remote course deviation indicator and RS 232 output for printers and other devices.

For additional information,

Write 51 on Reader Service Card

TRACOR INSTRUMENTS

Tracor recently introduced a new Satellite Navigator. Named after the North Star and the submarines that first tested the Transit system, the Polaris SatNav is a full feature, total performance system. The attractive housing is sleek yet functional with its yoke that provides overhead, bulkhead or table-top mounting flexibility.

The large, two-line LED presentation clearly details the navigation data required to efficiently and safely sail anywhere in the world. Tracor chose the LED display because of distinct advantages over a CRT presentation. First, because of fewer components and less power required, the LED display has an inherent reliability advantage over a CRT. Second, the Tracor Polaris LED display can be read from across the bridge. Finally, only the necessary data is shown for clarity and simplicity. Other "nice-to-have" navigation data is instantly available at a touch of a button, but is not continuously displayed to minimize confusion.

Polaris only draws 1.5 amperes at 12 volts. The navigation program for Polaris is based upon the Tracor SatNav II, which has received prestigious international type approvals from Det norske Veritas, Norwegian Maritime Directorate, and Swiss PTT.

Polaris operation can be as simple or sophisticated as the navigator chooses. Special software features such as multipass discrimination and force fix update provide the Polaris user with about 10 percent more useable satellite fixes than most other SatNav receivers. Automatic speed and heading interface, standby battery, and operation from ac or other than 12 volt dc mains power are available options.

For further information,

Write 52 on Reader Service Card

(continued on page 46)

Navigation/Communication Equipment Review

(continued from page 45)

TRIMBLE

Trimble Navigation of Mountain View, Calif., recently introduced a new Loran C navigation instrument, the model 5A. The 5A receiver is said to be a high-quality, reliable, and totally automatic system, so easy to use that anyone can operate it. Pushing the Lat and Lon buttons provides current position quickly and accurately; Lat/Lon are displayed to a resolution of 0.01 minute (60 feet). The 5A calculates course by the great circle route (shortest distance) from present position, and displays course and distance to destination.

The 5A receiver tunes out local interferences with four automatic notch filters. It constantly searches and electronically adjusts the filters for interferences so there is never a need for operator or internal adjustment of filters when sailing into a new area. The 5A automatically acquires all stations in the Loran chain and selects the two LOPs that give the most accurate fix. There is no need to evaluate the various stations and to select the best TDs; the Trimble does all that automatically.

For further information,
Write 53 on Reader Service Card

AAT

AAT Communications Corporation is a full-service marine electronics company. It provides all manner of equipment types in addition to installation and repair services to workboats, fishing vessels, and deepsea vessels. The firm serves the Port of New York area with its own personnel, and attends vessels in virtually all United States ports with its own technicians or those of similar service-first organizations who perform work in AAT's behalf.

The company publishes a newsletter that contains timely regulatory information as well as new equipment offerings and brief technical articles on marine electronics geared to the vessel operators' point of view. AAT offices are located in Staten Island, White Plains, and Garden City Park, N.Y., and in Bloomfield, N.J.

For further information,
Write 54 on Reader Service Card

Marinette Launches Another Berthing Barge For U.S. Navy

Marinette Marine Corporation, Marinette, Wis., recently launched the third in a series of 16 YRBM(L) berthing barges (photo above) under construction for the Naval Sea Systems Command. The YRBM(L) vessels have a 146-foot overall length, 46-foot beam, and 688-long-ton displacement. A total of 257 officers and crew will be accommodated within the vessel. Additional features to crew facilities include complete laundry services, recreation rooms, classrooms, machine and electrical shops, galley and mess areas, and onboard office and store space.

Delivery of the third and fourth vessels of the series are scheduled for June of this year. Marinette Marine is a major supplier of defense-related marine equipment and of custom-engineered commercial vessels for ocean and inland marine service.

GM-Powered Towboat 'Trotter' Delivered By Hudson Shipbuilders

Hudson Shipbuilders, Inc. (HUDSHIP), Pascagoula, Miss., recently delivered the 70-foot towboat Trotter (shown above) to Missouri River Barge Lines of St. Louis, Mo. The vessel is HUDSHIP's standard 70-foot towboat design and represents the yard's continued diversification in the ever-changing marine industry.

Trotter is powered by twin GM Detroit Diesel Allison 12V149NA engines, each rated 675 bhp at 1,800 rpm, with Twin Disc 540, 7:1 reduction gears. The auxiliary power is provided by two Delco generators powered by Detroit Diesel 4-71 engines. She is also equipped with two 40-ton Nabrico barge winches.

The pilot house has full all-around visibility and a 27-foot 6-inch eye level. She houses an assortment of electronic equipment, which includes one Furuno FR 1011 radar, one Bogen P/A intercom system, one Motorola 55/75 VHF radio with interference interlock, and one Motorola 55/75 bridge-to-bridge radio.

The Trotter will work out of New Orleans and will service the Mississippi River. She is the first of two vessels HUDSHIP is to deliver to Missouri River Barge Lines. The second vessel, the Colt, will be delivered in April this year.

Mare Island Naval Shipyard Elects New NCAA Officers

The Mare Island Naval Shipyard Chapter of the Naval Civilian Administrators Association recently elected new officers. Pictured above from left to right are: **Larry Hebert**, secretary, who is the director of the Quality Assurance Office; **Ted Allen**, president, who is the director of the Management Engineering and Data Processing Office: Capt. **E.J. Scheyder**, who is the Shipyard Commander; **George Stewart**, vice president, who is the superintendent of the Machinery Group; and **Douglas Ghiselin**, treasurer, who is the Nuclear Facilities and Equipment manager.

The Naval Civilian Administrators Association is the national organization of senior level managers employed in Navy civil service. The total membership is approximately 600, organized into 13 chapters located in seven naval shipyards, three naval aviation activities, the Naval Ships Engineering Center, the Naval Facilities Engineering Command, the Polaris Missile Facility/Naval Weapons Station, Charleston. Because of the positions held by the members, they exercise responsibility over many thousands of engineers, scientists, administrators, and other employees involved in the activities in which they are located. The purpose of the organization is to contribute to the improvement of management of the Department of the Navy.

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Hellenic Lines To Convert Four Cargo Ships To Container Vessels

As part of its continuing program of modernization aimed toward increasing present lifting capacity to meet the technological needs of the trade, Hellenic Lines has contracted for the conversion of four ships to fully cellularized container vessels. The vessels to be converted are four of the Pride Class, originally built in Finland in 1972. By replacing the midbody with a fully cellularized, 106-meter section with reefer capacity, the vessels will achieve 1,202-TEU container capacity, while maintaining a speed of up to 19 knots, and employing the most modern container stowage and handling devices.

Conversion will be handled by Cantieri Navali Riuniti, S.P.A. of Genoa, Italy, and will take place in either Palermo or at another of its three shipyards. All vessels will be delivered between February and August 1982. Future plans for deployment of three of the vessels are for operation in Hellenic Lines' U.K.-Continent/Arabian Gulf Service, and the fourth possibly for the U.S./Arabian Gulf Service.

Standard 35,000-dwt Bulk Carrier Developed By Japan's Nippon Kokan

NKK (Nippon Kokan) of Japan has developed a 35,000-dwt, standard type bulk carrier designed to meet the increasing demand for ships smaller than Panamax types. **Shin-ichi Hirayama**, president of NKK America Inc., said the ship will be constructed at the company's Shimizu shipyard.

With a draft of about 34½ feet, the carrier could call at most of the major ports of the world. Its hull is designed with the strength to carry all kinds of heavy cargo in alternate holds, and its large hatch openings would expedite the loading and unloading of containers.

The beam of the vessel has been broadened to reduce hull weight, a feature of an economical ship, but it maintains the operational efficiency of a conventional ship. Length between perpendiculars is 547.89 feet, beam is 96.78 feet, depth is 48.55 feet, and draft 34.45 feet. The vessel's main engine will be a Sulzer 6RLB-66 diesel with a service rating of 11,850 bhp, providing a speed of 15.1 knots.

Choctaw Asks Title XI For Rig Reconstruction To Cost $86 Million

Choctaw Drilling Company, Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction or reconstruction of three drilling vessels. Two of the vessels are expected to be employed initially in the inland waterway of Venezuela and the third, offshore West Africa. The applicant is a subsidiary of Santa Fe International Corporation, Alhambra, Calif. The application includes:

A twin-hulled semisubmersible drilling vessel being converted from a hull previously used for a semisubmersible pipelaying barge. This work is being done by Avondale Shipyards, Inc., New Orleans, La., with delivery scheduled for August 31.

A floating-type inland barge designed for drilling in shallow water. This vessel is being converted from an existing launch/cargo barge by Vemar Inc., Channelview, Texas. Delivery is scheduled for June 30.

A new inland waters barge designed for use in shallow water. No builder has been proposed for this vessel, but delivery is estimated for late 1982.

All three vessels are eligible for guarantees of up to 75 percent of their estimated costs. The application requests guarantees totaling $48,399,000 of the total estimated cost of $86,185,000.

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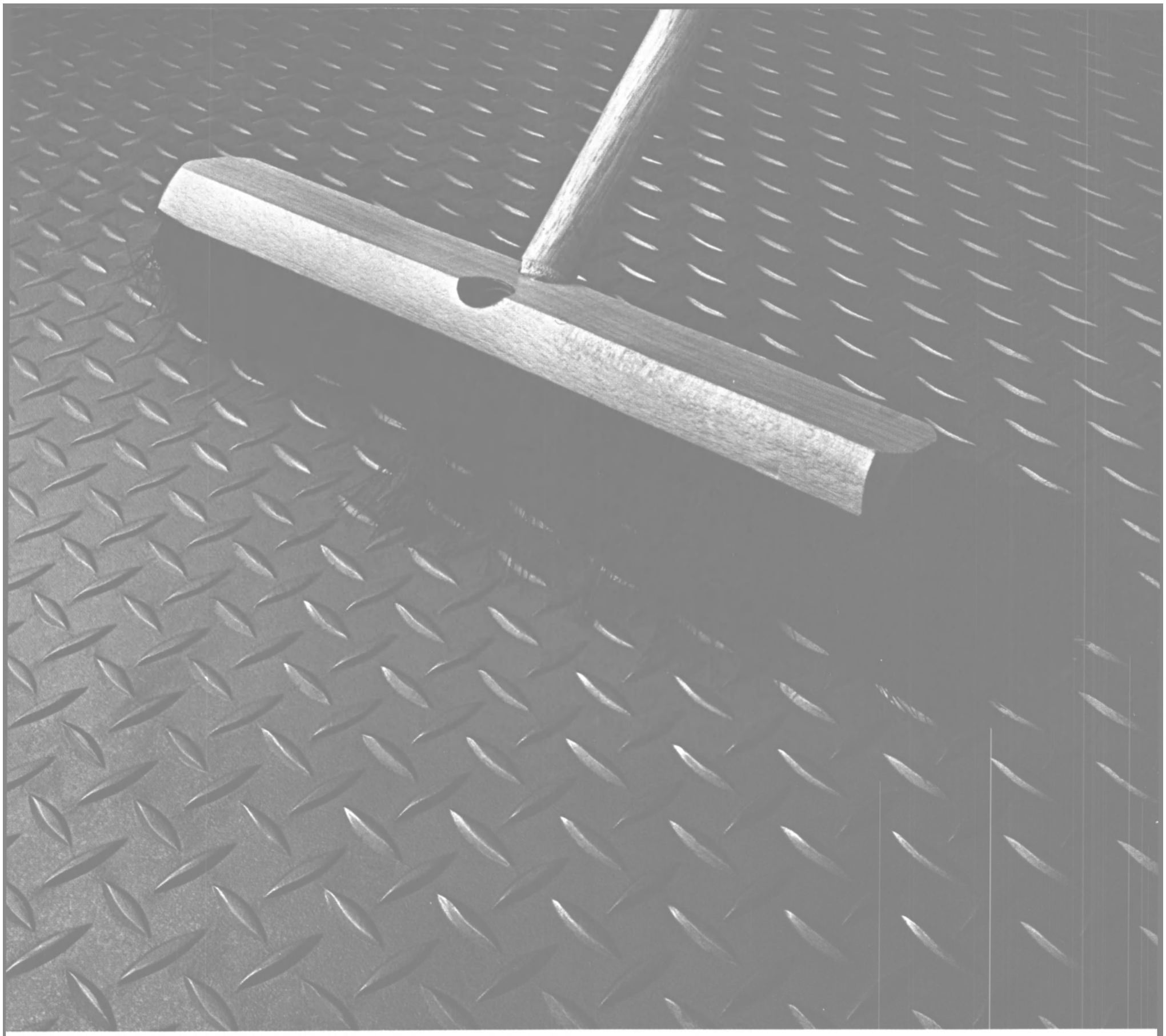

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VPA Draws Plans For 25-Million-Ton Coal Exporting Facility

The Virginia Port Authority (VPA) feels that a public coal facility capable of exporting 25-million tons annually will be adequate to meet the immediate market demand, according to **J. Robert Bray,** VPA executive director. After discussions with engineers and consultation with potential users of the facility, the VPA said that the coal terminal would require 220 acres of the 623-acre Cox Enterprises site in Portsmouth, plus an adjoining 86-acre site owned by Transco.

The VPA and the City of Portsmouth are also discussing the possibility of use of a 100-acre site immediately adjacent to the Transco site. The 100-acre site is owned by Portsmouth Port and Industrial Commission. The total 406-acre site would provide the necessary ground storage for the 25-million-ton capacity, and would also provide capacity for some future expansion, Mr. **Bray** said.

The precise configuration of the property required for the coal facility cannot be determined without a detailed feasibility study, said Mr. **Bray,** but the terminal will not require the entire 623-acre Cox site. The relocation of rail access to the coal facility is advocated by the VPA. The proposed new portion of the rail line, to be built by the VPA, would run from a switching station in Suffolk to the site. The proposed overpasses and grade crossings would eliminate major traffic tie-ups in Portsmouth and Chesapeake.

ASNE Delaware Valley Chapter Hears Report On Delaware River

Participants at recent ASNE Delaware Valley Chapter included (L to R): **L. Cohen,** vice chairman, ASNE Delaware Valley Chapter, CDI Marine Company, Voorhees, N.J.; **Howard Taylor,** presenter, Philadelphia Maritime Museum, Philadelphia; and **E.P. Weinert,** chairman, ASNE Delaware Valley Chapter, Naval Ship Systems Engineering Station, Philadelphia.

Approximately 70 members and guests, the largest turnout ever, attended a recent meeting of the Delaware Valley Chapter of the American Society of Naval Engineers at the Officer's Club, Philadelphia Naval Base.

Howard Taylor of the Philadelphia Maritime Museum made an excellent slide presentation on "Building the Waterway: A Historical Look at the Delaware River." The Port of Philadelphia is not a great natural seaport. However, it ranks among the top three in the United States in terms of total tonnage handled. This is the result of a significant amount of human ingenuity and energy expended. The presentation dealt with the development of the Delaware River and the Port from 1609 to 1980.

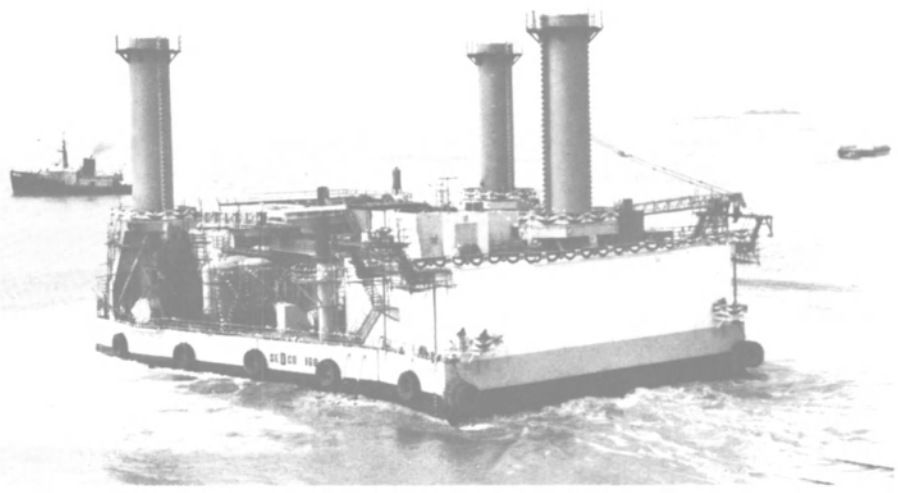
Chapter chairman **Eugene P. Weinert** presented Mr. **Taylor** with a "Certificate of Appreciation."

Holland-America Selects Sulzer Diesel Engines For Its Two Cruise Ships

Sulzer low-speed, two-stroke engines have been specified for main propulsion and auxiliary duties for two 32,000-grt, 30,500-bhp passenger cruise ships recently ordered by Holland-America Line from the St. Nazaire Shipyard of Chantiers de l'Atlantique. With fuel costs forming a major factor in ship operating costs, the owners have planned a machinery installation to ensure overall economy, in particular in fuel bills and maintenance and with special regard to low noise level.

After detailed studies of various classes of main and auxiliary machinery and systems, Holland-America, with Chantiers de l'Atlantique, have ordered for each ship three Sulzer crosshead-type two-strokes, all to burn heavy oil. Two are for main propulsion and the third to drive two electric alternators. It is the first time in many years that two-stroke crosshead-type engines have been used for auxiliary power generation. The reasons in this case are low consumption on low-grade fuel oil and fewer cylinders and moving parts to maintain.

The propulsion engines, to be built in the CCM-Sulzer plant at Mantes-la-Jolie, will be of the newly developed 7RLB66 type, each rated at 15,225 bhp (11,200 kw) at 140 rpm. Each of these seven-cylinder "small-bore" engines is, however, optimized for fuel economy reasons for 14,680 bhp (10,800 kw) at 135 rpm.



Promet Private Launches Jackup Drilling Rig For Sedco

Promet Private Limited, Singapore, recently launched the Sedco 160 (shown above). Under construction for Sedco, Inc. of Dallas, the rig is a BMC-150 Baker Marine designed, self-elevating independent leg type equipped with three independent tubular legs of 260 feet, raised and lowered by means of rack and pinion electrohydraulic drive. Jacking speed can be varied to 60 feet/hour at full load.

The platform measures 151 feet by 155 feet by 18 feet. It is intended that the unit will operate at water depths of up to 160 feet. Delivery had been scheduled for the end of March 1981.

Following the award of the above rig, there are two more orders from Sedco to Promet for the construction of the Sedneth 201 and Sedneth 202. The two identical rigs measure 174 feet by 162½ feet by 18 feet. Each rig will be equipped with three independent truss legs of 301½ feet. Jacking system shall be by means of BMC rack and pinion electrohydraulic drive. Both BMC-200 I C Class jackups will be able to operate at water depths of up to 200 feet.

Principals at recent New York SNAME meeting included (L to R): **John Higginbotham,** Papers Committee chairman; **John C. Daidola,** author and secretary-treasurer; **Molly Dorman,** wife of honored guest **William J. Dorman; Robert G. Mende,** secretary and executive director of SNAME; and **Neil Reddy,** vice chairman of the Section.

SNAME New York Section Honors William J. Dorman

A recent meeting of the New York Metropolitan Section of The Society of Naval Architects and Marine Engineers held at the Whitehall Club in New York City featured a paper titled "Maneuvering Considerations in the Design Ship Spiral," by **John C. Daidola** and **Garmia Daniel**. The paper surveyed the use of available data from published literature in conjunction with accepted analytical approaches as a tool to enable the naval architect to predict maneuverability of a vessel at the design stage.

The authors evaluated the applicability of such information gathering techniques to the basic design effort. An approach to a quantitative measure of maneuverability was discussed in these contexts, with recommendations as to what can be done to enhance a naval architect's ability to predict maneuverability of vessels in the design stage.

William J. Dorman, a 46-year member of the Society, was the honored guest at this meeting. An active member of SNAME, Mr. **Dorman** is a past member of Council and past chairman of the Ship Technical Operations Committee and the Applications Committee. A recipient of the prestigious Vice Admiral E.L. Cochrane Award from the Society, Mr. **Dorman's** impressive career included work with J.J. Henry Company, American Export Lines, Bureau Veritas, and the American Bureau of Shipping.

Two B&W-Powered Product Tankers Ordered From van der Giessen-de Noord

Nedlloyd Bulk B.V., Rotterdam, a member of the Nedlloyd Group, has ordered two product tankers of 38,650 dwt from van der Giessen-de Noord, to be delivered in May and September 1983, respectively.

The tankers will be identical to the two, Maassluis and Maasslot, ordered in June 1980. They are suitable for the transport of crude, various petroleum products and chemicals, as well as edible oils.

The ships will have an overall length of 171.80 meters, beam of 32.24 meters, depth of 16.50 meters, and draft of 11.30 meters. The propulsion machinery consists of a diesel engine of Burmeister & Wain make, type 6L-67GFCA, with an output of 13,100 bhp at 145 rpm, providing a service speed of 15 knots.

Petromar Seeks Title XI On Six Tug/Supply Vessels To Cost $31.2 Million Total

Petromar International, Ltd., P.O. Box 967, Rockport, Texas, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of six tug/supply vessels. The 193-foot-long, diesel-powered vessels are being built by Halter Marine, Inc., New Orleans, La., with deliveries scheduled through June 1981. They will be operated in the Gulf of Mexico.

The requested guarantee is for $27,300,000, or 87½ percent of the vessels' total estimated actual cost of $31,200,000.

Macan Offshore Seeks Title XI On Two Jackups To Cost $61.5 Million

Macan Offshore Ltd., Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two jackup drilling rigs capable of operating in water up to 150 feet deep and intended for operation in the U.S. Gulf of Mexico.

Vemar, Inc., Channelview, Texas, has been proposed to build the rigs, with deliveries in March and July 1982.

The requested guarantee is for $46,125,000 or 75 percent of the $61,500,000 estimated actual cost of the rigs.

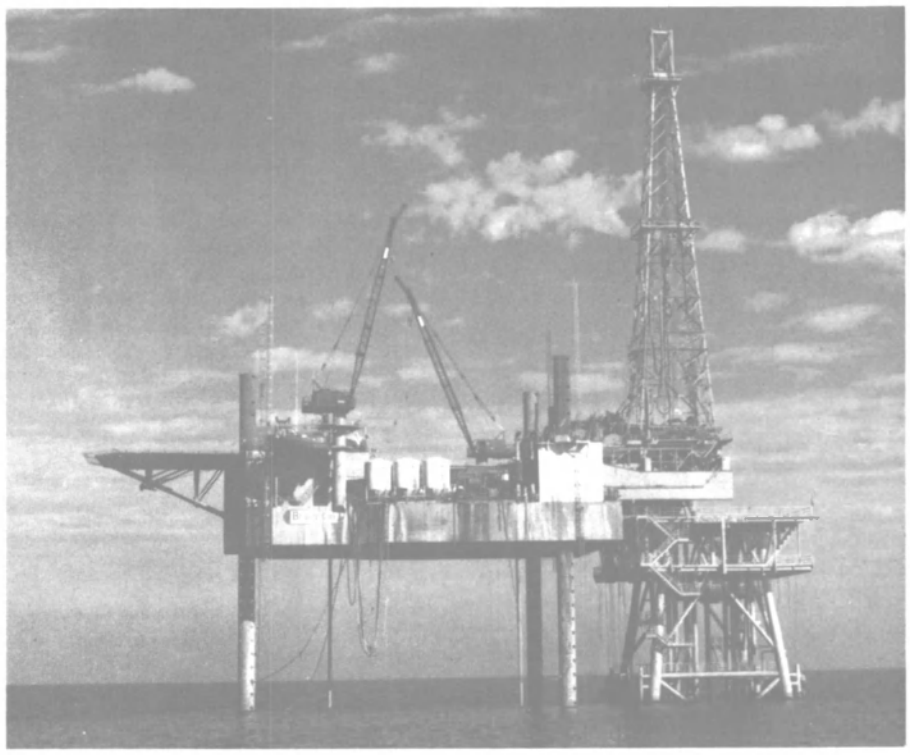
Marathon LeTourneau, C-E And Sea Tank Form New Company

Artist's drawing of a Sea Plex Corporation retrievable, bottom-supported drilling / production / storage facility as it would look on site.

Three major energy-related companies have formed Sea Plex Corporation of Tulsa to provide the offshore industry with retrievable, bottom-supported drilling/production/storage facilities specifically designed to exploit fields that had been considered marginal. These facilities will operate in water depths up to 500 feet, according to **John A. Haeber,** executive vice president and general manager of Sea Plex, which is jointly owned by Combustion Engineering, Inc., Stamford, Conn.; Sea Tank Company, Rungis, France; and Marathon LeTourneau Offshore Company, Houston.

The Sea Plex system is designed to meet operator requirements for lower total investment in marginal field development and earlier cash flow. Each facility will incorporate a field-proven Marathon LeTourneau Offshore jackup platform and a Sea Tank Company concrete storage caisson/base. The wellheads, templates, tie-back systems along with other seafloor and surface components, as well as production processing equipment, will be supplied by Combustion Engineering's subsidiaries C-E Vetco, Gray Tool Company, and C-E Natco.

In addition to being retrievable upon field depletion for relocation to other marginal fields, the Sea Plex facility is designed to arrive on site in a complete, functional state. This capability will permit virtually immediate full-time, on-station drilling, workover, and production operations with a minimum set-up time.



The Broughton II, which was commissioned March 14 at Bethlehem Steel Corporation's shipyard at Beaumont, Texas, is similar to the Broughton I, shown here drilling on location. The latter was also built for Broughton Offshore Company of Houston by the Beaumont yard.

Broughton Rig Commissioned At Bethlehem's Beaumont Yard

Broughton Offshore Company of Houston and Bethlehem Steel Corporation's Beaumont, Texas, shipyard recently commissioned a 100-foot water depth, mobile offshore drilling unit. The rig was christened the Broughton II by its sponsor, **Mrs. W.J. Wooten**, wife of the president of Texas Gas Exploration Corporation, Houston. This rig is the second of two similar units to be delivered by Bethlehem to this offshore drilling company.

The mat-supported jackup consists of a platform measuring 143 feet by 100 feet supported by three 6-foot-diameter columns fixed to a large mat that is 180 feet by 140 feet. It features a heavy-duty cantilevered substructure that offers the capability of positioning its drill floor over existing offshore production platforms in order to drill development wells or to rework existing wells. The rig will operate in waters from 10 to 100 feet deep and has equipment rated for drilling wells to 30,000 feet. It is capable of withstanding forces resulting from 100-knot winds and 43-foot seas.

On location, the rig will have a total variable load capacity of three million pounds and will handle hook-plus-setback loads of one million pounds on wells as far as 35 feet aft of the platform deck. It will have a maximum cantilever reach of 45 feet with a hook/setback load capacity of 750,000 pounds at the rig centerline.

The Broughton II will contain onboard, air-conditioned living accommodations for 49 persons, complete with sleeping quarters, galley, recreation room, laundry, and rest rooms. It was designed and built to comply with U.S. Coast Guard and American Bureau of Shipping standards for construction of mobile offshore drilling units.

Orris Named Intermodal Operations VP At American President Lines

Donald C. Orris has been named vice president, intermodal operations at American President Lines (APL), according to **W.B. Seaton**, president. Mr. **Orris** joined the company in 1977 as director of Intermodal Operations, and in that capacity has contributed to the development of APL's trans-Pacific intermodal system, today one of the most extensive in the world. It includes the innovative "Linertrain," an internally managed weekly rail service introduced in 1979 to link APL's Far East ports with the U.S. East Coast without the delays and equipment shortages often associated with transcontinental freight movement.

Prior to joining APL, Mr. **Orris** was associated for 15 years with the Denver & Rio Grande Western Railroad in Denver, from 1970 to 1977 as manager of intermodal services. He reports to **W.B. Hubbard**, senior vice president, operations.

Mangone Swiftships Delivers Pocket Tanker To Sun Transport

Mangone Swiftships, Inc. of Houston recently delivered the 245-foot Northern Sun (shown above) to Sun Transport, Inc., a subsidiary of Sun Company, Inc. Classed + A1 Oil Carrier + AMS by the American Bureau of Shipping, the minitanker has a cargo capacity of about 22,000 barrels of Grade B petroleum products.

The Northern Sun is now in service at U.S. East Coast ports for Sun Transport from her home port in Delaware. The ship has an overall length of 245 feet 6 inches, beam of 45 feet, and depth of 19 feet 3 inches (74 by 13.5 by 5.8 meters), with a draft of 14 feet 6 inches (4.4 meters). Main propulsion is provided by twin GM Electro-Motive Diesel 8-645 E7 engines developing a total of 1,900 bhp. She has a service speed of about 12 knots and accommodations for eight crew members.

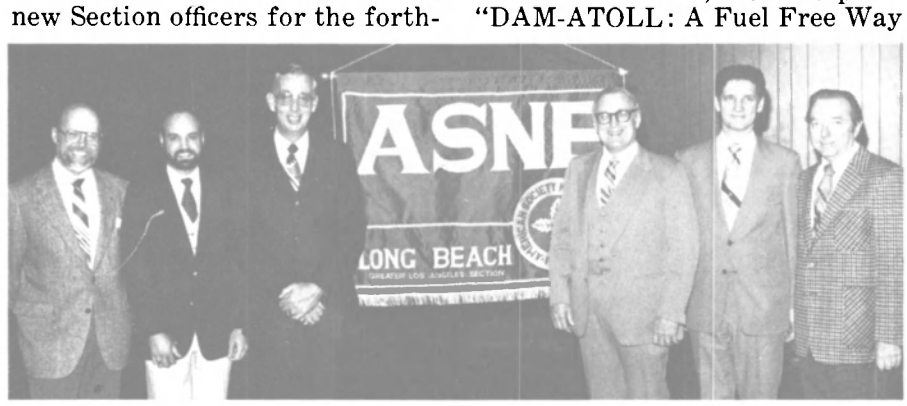
Cargo is carried in 10 tanks arranged in three segregated sections. Three diesel-driven deepwell pumps, each rated 2,100 gpm at 125 psi, handle cargo unloading. Electronics aboard include Sperry gyrocompass system, Sperry autopilot, Raytheon Fathometer, two radar units, automatic direction finder, two VHF radio sets, and an SSB radio. The ship is also equipped with dual 125-kw, diesel-driven generators and a 35-kw standby unit.

Certificated by the U.S. Coast Guard, the Northern Sun combines oceangoing capabilities with the size and maneuverability to navigate inland waterways. The special-purpose vessel is among the first of its type in U.S.-flag service.

Long Beach-Los Angeles ASNE Elects New Officers

The Long Beach-Greater Los Angeles Section of The American Society of Naval Engineers held a recent regular monthly meeting at the Officers Club of the Armed Forces Reserve Center, Los Alamitos, Calif. The meeting was the occasion of the installation of the new Section officers for the forthcoming year. Approximately 80 members and guests attended.

Following dinner, chairman **Bob Malone** welcomed all present and turned the meeting over to **Carl Erickson**, program chairman, who introduced the evening's speaker, **Clinton Sherburne**, and his topic—"DAM-ATOLL: A Fuel Free Way



Newly elected officers at ASNE Long Beach-Greater Los Angeles Section are (L to R): **Gerald A. Bowles**, secretary-treasurer; Lt. **Larry St. John**, USN, councilor; Capt. **R.H. Randall**, USN, vice chairman; Capt. **J.A. Gildea**, USN, chairman; **Edwin J. Petersen**, councilor; and **Calvin Jolly**, councilor.

To Make Power From Ocean Waves." Mr. **Sherburne** is the project manager for the DAM-ATOLL Project at the Lockheed Space and Missile Company in Sunnyvale, Calif.

The author explained that the concept was derived by its inventor recalling an obscure World War II report of the inability of the planners of an invasion to find a leeward side of an atoll to effect a landing. It made no difference which side was approached, there were always waves breaking on the beach. From this observation it was deduced that the linear wave fronts were bending around the atoll thereby causing waves to land on the beaches at all points of the compass.

DAM-ATOLL derives its name from DAM—a barrier to control the flow of water, and ATOLL—a ring-shaped coral island and its associated reef. The DAM-ATOLL is a project investigating the conversion of ocean wave energy into electrical power. Unlike most other ocean wave energy systems that attempt to convert the wave motion into electrical energy using mechanical motion mechanisms, DAM-ATOLL converts the energy from the wave into electrical energy directly.

A hemisphere, approximately 100 meters in diameter (the ATOLL), focuses the wave energy into the center of the structure. The hemisphere provides an artificial beach, causing the waves to break, and at the same time curving the linear wave front completely around the structure. The top of the structure is set at a precise level with the surface of the water, causing the wave breakers to "crash" into vanes (the DAM) at the center of the ATOLL. The vanes convert the wave energy into a circular motion in a cylinder 30 feet in diameter and 60 feet high. This circular motion forms a large hydraulic flywheel, which turns a 10-15 rpm turbine located at the bottom of the cylinder. The turbine will be connected by shafting to a generator located above the water at the top of the DAM.

The development of the DAM-ATOLL is currently passing from the feasibility stage to the developmental stage and appears to hold great promise in an age of rising fuel prices and increasing energy demands. It is envisioned that DAM-ATOLLs can be located offshore any land mass where waves having a minimum height of 2-3 meters are prevalent.

Past chairman **Phil Finkelstein** was called on to conduct the installation of the newly elected officers to guide the Section through the next 12 months. They are: chairman, Capt. **J.A. Gildea**, USN; vice chairman, Capt. **R.H. Randall**, USN; secretary-treasurer, **Gerald A. Bowles**; and councilors Lt. **Larry St. John**, USN, **Calvin Jolly**, and **Edwin J. Petersen**.

New Catalog Describes Coppus Engineering's Turbine Generator Sets

Coppus Engineering Corporation's new catalog is a comprehensive presentation of its complete line of synchronous, induction, and dc turbine generator sets up to 2,500 kw. Cost-saving applications are covered in detail and illustrated with charts, diagrams, and photographs of typical TG set configurations. Another section is devoted to custom-engineered sets for special applications — gas expander turbine drives, unique dual-drive turbine, ac/dc sets, and "no-break" turbine-motor generator sets.

Major components are presented separately and include: features of Coppus turbine drivers up to 4,000 hp; specifications of synchronous, induction and dc generators up to 2,500 kw; gear reducer drives; NEMA A, NEMA D, and electric turbine speed control governors; basic NEMA 1 control panels for synchronous and induction generator sets; plus add-on components required for manual and automatic operation of synchronous generators used in parallel, non-parallel, and standby applications.

For additional information,
Write 12 on Reader Service Card

Big Car Carrier 'Glorious Ace' Completed By Hitachi Zosen

The 17,743-dwt (metric) pure car carrier Glorious Ace (shown above) was delivered to her joint owners, Mitsui O.S.K. Lines, Ltd. and Baba-Daiko Steamship Company, Ltd., both of Japan, recently. Capable of carrying a total of 5,688 cars of various types, the new ship is said to be one of the largest of its kind in the world. She was constructed at the Ariake Works of Hitachi Zosen, and will be put into service between ports in Japan and those in North America and Europe.

In addition to passenger cars, the ship can carry other types of motor vehicles including trucks, large and small busses, and forklifts. She has a total of 13 cardecks, the seventh being moveable to permit height adjustment. The eighth cardeck is provided with three shore ramps, two at midship and one at the stern. The two midship ramps can be raised to the seventh cardeck.

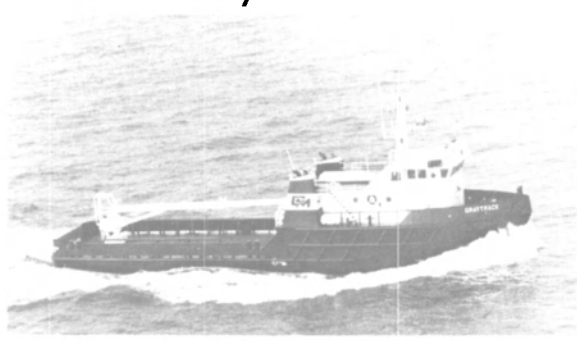
Glorious Ace has an overall length of 623.35 feet, beam of 105 feet, depth to upper deck of 100.56 feet, and full-load summer draft of 29.20 feet. Gross measurement is 16,880.86 tons. Her main engine is a Hitachi/B&W 9L67GFC diesel with a maximum continuous output of 16,800 bhp at 119 rpm; service output will be 14,280 bhp at 113 rpm, producing a speed at full draft of 19.15 knots. The ship is classed by Nippon Kaiji Kyokai.

Allen Nail Named VP And National Sales Manager For Microphor, Inc.

Allen M. Nail has been named vice president and national sales manager for Microphor, Inc., **John M. Mayfield Jr.**, president of the company announced. Mr. **Nail**, who has been Eastern sales director for the firm since 1976, joined Microphor in 1972 as a sales representative. In his new capacity, he has assumed responsibility for Microphor's national marketing program and sales force. He is headquartered at 5005 Vernon Oaks Drive in Dunwoody, Ga.

Microphor manufactures waste sanitation systems, low flush toilets, and sewage treatment tanks for use in marine vessels.

HUDSHIP Delivers Twin Supply Vessels To Gray Mackenzie



Hudship Shipbuilders, Inc. (HUDSHIP) of Pascagoula, Miss., recently delivered its third and fourth supply vessels, the Graytrack (shown above) and Graytraverse, to Gray Mackenzie Company, Ltd., Marine Division located in Bahrain. The design is HUDSHIP's standard 120-foot utility vessels with some modifications to suit the owner's particular requirements. The fo'c'sle house arrangement has been redesigned to accommodate 10 crewmen in five cabins. The upper house has been extended to accommodate charterer's personnel in two 2-man, one 4-man and one 1-man cabins.

The afterdeck of each vessel has a National Marine 12.5-ton crane, with 100-foot boom, mounted at centerline to service the entire cargo deck. To each side of the crane are Hydradyne hydraulic winches, giving the vessel a 4-point mooring capability.

Graytrack and Graytraverse are both powered by twin GM Detroit Diesel Allison 16V92NA engines, each rated 600 bhp at 1,800 rpm, with Twin Disc 520 reduction gears. On sea trials the vessels exceeded 10 knots in a loaded condition and logged almost 13 knots lightly loaded. The auxiliary power is provided by two 99-kw KATO generators powered by Detroit Diesel 6V92 engines. This is said to be the first application for the 6V92 engines as generator power plants. Engines are monitored by a 21 point Marine Electrical Design monitoring system.

The pilothouse was arranged for maximum all-around visibility. She houses an assortment of electronic equipment, which includes one Decca 914C marine radar, one Sailor SSB receiver model R-105, one Sailor SSB transceiver model T-124, one Sailor model RT 144AC VHF transceiver, one Datamarine 2650 depth indicator, and one Sperry SR 130 gyrocompass with repeater.

Both the Graytrack and Graytraverse are built and tested to ABS standards and are classed A-1 All Ocean Service. The Graytest, the fifth vessel HUDSHIP has under construction for Gray Mackenzie, is scheduled for delivery in May 1981.

Calendar Of Coming Events

Conference on Coal Transportation **May 4-5**
Sponsored by The Energy Bureau and Coal Week magazine.
Stouffer's National Center, Arlington, Va. Contact **Robert W. Nash**, The Energy Bureau, 41 East 42nd Street, New York, N.Y. 10017; (212) 687-3178.

Offshore Technology Conference **May 4-7**
Sponsored by The Society of Naval Architects and Marine Engineers and 11 other technical societies.
Astrodomain, Houston. Contact OTC, 6200 North Central Expressway, Dallas, TX 75206; (214) 361-6604. (Preview in April 1 issue of MR/EN)

Nor-Shipping '81: The 8th International Shipping Exhibition **May 11-16**
Organized by Norges Varemesse (The Norwegian Fair Organization).
The Sjolyst Centre, Oslo, Norway. Contact **Mrs. Else-Marie Gehrken**, Norges Varemesse, P.O. Box 130 Skoyen, Oslo 2, Norway; telex 18748. (Preview in the April 1 issue of MR/EN)

Propellers '81 Symposium **May 26-27**
Sponsored by SNAME under the auspices of the Hampton Roads Section.
Cavalier Hotel, Virginia Beach, Va. Contact **Andrew Szypula**, CTD, Bethlehem Steel, Sparrows Point, MD 21219; (301) 477-6832. (Preview in May 15 issue of MR/EN)

Telecommunications in Shipping **May 26-28**
Seminar organized by Seatrade Academy.
American Bureau of Shipping Auditorium, 65 Broadway, New York City. Contact Seatrade, 17 Battery Place, New York, N.Y. 10004; (212) 422-6470.

Portex '81: International Port Exhibition and Conference **May 26-30**
Organized by Hamburg Messe und Congress GmbH, and sponsored by the Senate of the Free and Hanseatic City of Hamburg.
Exhibition Grounds, Hamburg, West Germany. Contact **Hans J. Rathje**, The Hamburg Group, 545 Madison Avenue, New York, N.Y. 10022; (212) 758-4651. (Preview in May 1 issue of MR/EN)

MARSIM '81: Second International Conference on Marine Simulation **June 1-5**
Cosponsored by the National Maritime Research Center, and others.
U.S. Merchant Marine Academy, Kings Point, N.Y. Contact MARSIM '81, National Maritime Research Center, Kings Point, N.Y. 11024; (516) 482-8200.

8th Ocean Energy Conference **June 7-11**
Sponsored by the U.S. Department of Energy, and organized by The Marine Technology Society.
Capital Hilton Hotel, Washington, D.C. Contact MTS, 1730 M Street N.W., Washington, D.C. 20036; (202) 659-3251.

XV Biennial Conference **June 7-12**
Sponsored by the International Cargo Handling Coordination Association.
Edmonton Plaza Hotel, Edmonton, Alberta, Canada. Contact **Peter J. Elias**, conference administrator, 418 Legislative Building, Edmonton, Alberta, Canada; (403) 427-2080.

Dynamics of World Coal Trade **June 10-11**
Symposium sponsored by the Maritime Association of the Port of New York, the National Coal Association, and the N.Y. Journal of Commerce.
Biltmore Hotel, New York City. Contact **C.S. Truog**, Maritime Association, 80 Broad Street, New York, N.Y. 10004; (212) 425-5704.

ICE TECH '81: SNAME Spring Meeting/STAR Symposium **June 16-19**
Sponsored by The Society of Naval Architects and Marine Engineers, and hosted by the Eastern Canadian Section.
Chateau Laurier Hotel, Ottawa, Ontario, Canada. Contact SNAME, One World Trade Center, Suite 1369, New York, N.Y. 10048; (212) 432-0310. (Preview in May 1 issue of MR/EN)

Ro-Ro 81: 5th International Conference and Exhibition on Marine Transport using Roll-on/Roll-off Methods. **June 30-July 2**
Organized by Business Meetings Limited.
Congress Centrum, Hamburg, Federal Republic of Germany. Contact Ro-Ro Secretariat, 2 Station Road, Rickmansworth, Herts WD3 1QP, England; (09237) 76363, telex 924312. (Preview in June 15 issue of MR/EN)

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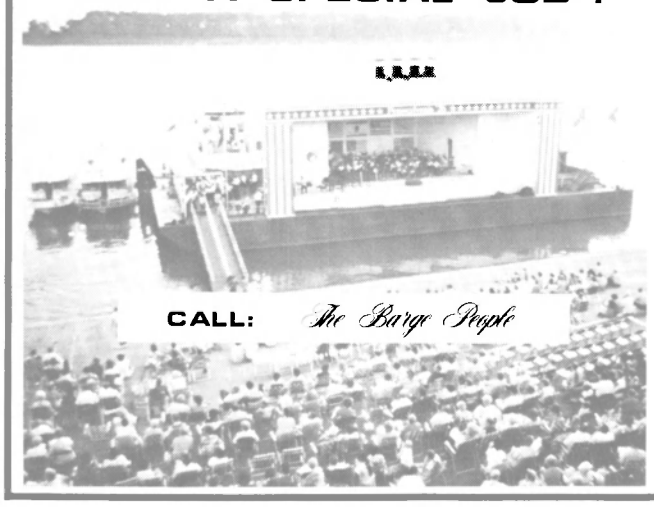

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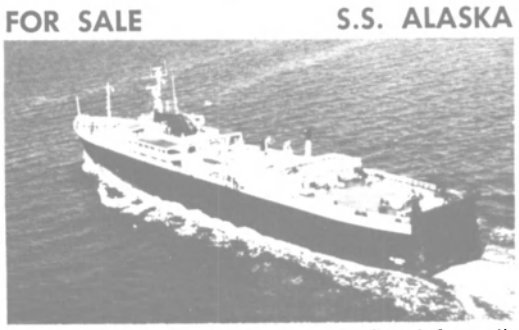

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Large inventory of surplus chain and fittings

Supply of new chain, including ten shots of 2 5/16″ and twenty shots of 2 5/8″

9 ½ x 12 American Hoist & Derrick Winches, reconditioned equal to new

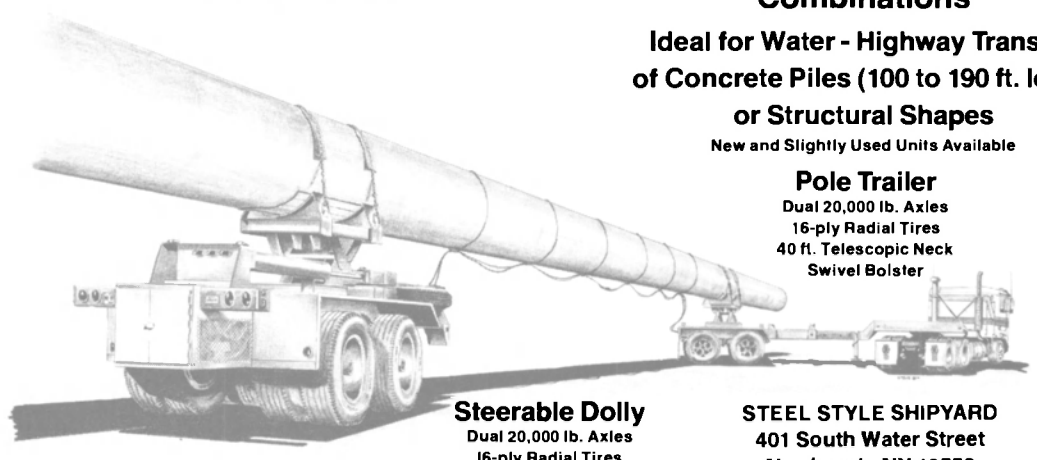
Spare parts for all steam winches

STANDARD STEAM WINCH CO., INC.
Agents for The Crosby Group
191 Van Vorst St., Jersey City, N.J. 07032 201/433-6974

SYNCRO LIFT® DRYDOCKS AND TRANSFER SYSTEMS

Estimates at no cost or obligation
PEARLSON ENGINEERING CO., INC.
P.O. BOX 8/MIAMI, FLA. 33156/(305) 271-5721
TELEX: 051-9340/CABLE: SYNCROLIFT

FOR SALE



Pole Trailer and Steerable Dolly Combinations

Ideal for Water - Highway Transfer of Concrete Piles (100 to 190 ft. long) or Structural Shapes

New and Slightly Used Units Available

Pole Trailer
Dual 20,000 lb. Axles
16-ply Radial Tires
40 ft. Telescopic Neck
Swivel Bolster

Steerable Dolly
Dual 20,000 lb. Axles
16-ply Radial Tires
10 hp. Pony Engine and Hydraulic Booster

STEEL STYLE SHIPYARD
401 South Water Street
Newburgh, NY 12550
(914) 562-0860

FOR SALE

or

LEASE

Small working repair Yard, Approved Government Repair Facility, Adjacent to Major Waterway-Marine Railway. Barge Crane, Tug, Tooling, etc.

904-765-5400

Jacksonville, Florida

LARGE STOCKS

ANCHORS--CHAINCABLES

WINCHES -- WINDLASSES -- DECKCRANES
GENERATORS -- ACCOMMODATION LADDERS
CAPSTANS -- LIFEBOATS -- GANGWAYS -- PUMPS
CHOCKS -- FAIRLEADS -- ETC.

WILLEM POT B.V.
45 Stationsplein—Rotterdam
Tel: 011-31-10-11 98 70 Telex: 22496 (wbpot)

FOR SALE

WHIRLEY CRANE

(60/100 TON)

GANTRY MOUNTED

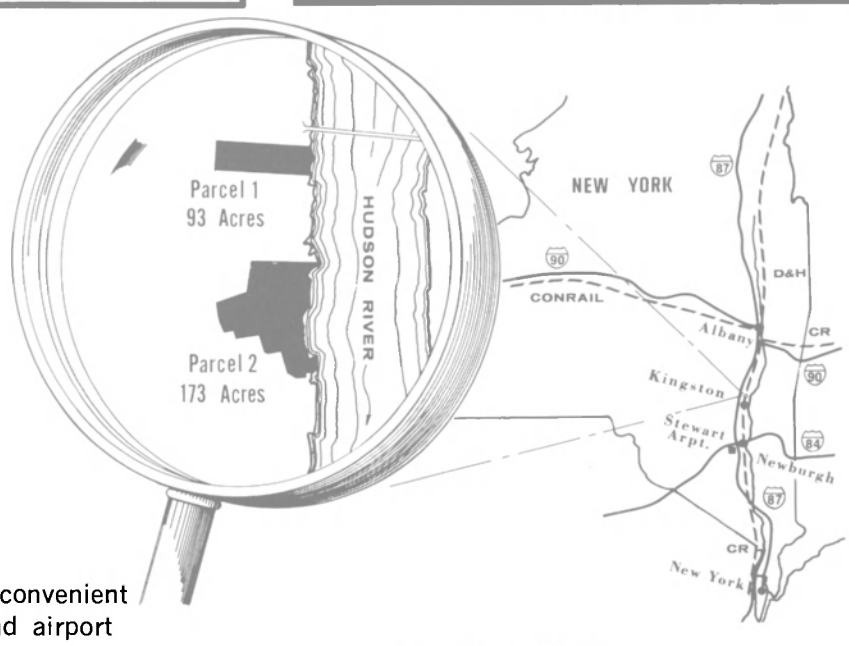
BARGAIN PRICE—
EXCELLENT CONDITION

Clyde — 32′ track gage, New Gantry installed 1974. Crane can be seen in operation. Presently rated 60 Ton can be converted to 75 Ton or 100 Ton. Also to self contained. Complete specifications available.

CALL COLLECT

NICOLAI JOFFE CORPORATION
9171 Wilshire Boulevard Beverly Hills, Ca. 90210
(213) 878-0650 Telex 67-4638

FOR SALE



Deep Water Site on the Hudson River near Kingston, NY

Suitable for Coal Export

Rail access available, convenient to major highways and airport

Parcel 1 - 93 acres - $1.4 million
Parcel 2 - 173 acres - $2.35 million

Steel Style Marine
401 South Water Street
Newburgh, NY 12550
(914) 562-0860

FOR SALE

NEW — UNUSED

4—**BUTTERWORTH HEATERS** 850 Sq. Ft.
90/10 cuni tubes 180psi steam
75/210° sea water

3—**FW/SW HEAT EXCHANGER** 1686 Sq. Ft.
90/10 cuni tubes 113/90° fresh water

8—**FUEL OIL HEATERS** 90 Sq. Ft.
125psi steam 400psi design pressure

8—**CONTAMINATED DRAIN COOLERS**
83 Sq. Ft. 150 psi design 250/95° out

All above ABS and Coast Guard approved manufactured by American Standard 1974 for San Clemente T8-S-100B Class Tankers. Complete specifications & drawings available.

NICOLAI JOFFE CORPORATION
9171 Wilshire Boulevard Beverly Hills, Ca. 90210
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For Sale at Zidell

AVAILABLE NOW FOR IMMEDIATE SHIPMENT

Two 500-ton Gantry Cranes — 70-foot Track Span

(CAN BE WIDENED TO 100 FEET)

Originally Barge Handling. As used on LASH Ships. Manufactured by Alliance. Late Model built to ABS and MARAD requirements.

Good Condition. Immediately Available. Priced at a fraction of New Replacement Cost. Complete with Lifting Beams and Spreader Beams (not shown in photograph)

AC Power Input Through Cable Reel
DC Hoist & Gantry Motors & Controls
4–150 HP–240 Volt DC Hoist Motors
4–150 HP–240 Volt DC Gantry Motors
2–265 KW–500 Volt DC M-G Sets

Units Can Be Modified

Possible other uses
1) Moving heavy equipment
2) Dam Sites
3) Concrete Prefab plants
4) Railroad yards
5) Steel plants

Geared Track is also available at extra cost

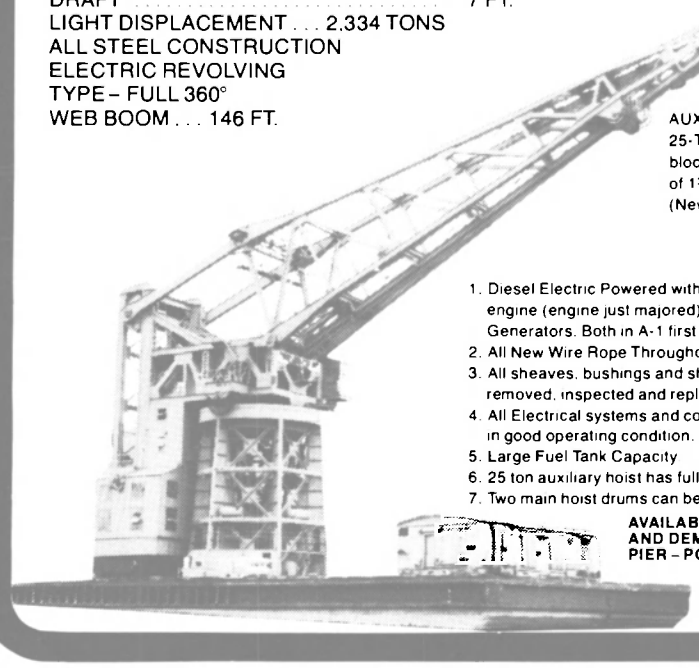
200 TON/DIESEL ELECTRIC
Floating Crane

FOR SALE – RENT– CHARTER

LENGTH OVERALL ..... 140 FT.
BEAM ..... 84 FT.
DRAFT ..... 7 FT.
LIGHT DISPLACEMENT . . . 2,334 TONS
ALL STEEL CONSTRUCTION
ELECTRIC REVOLVING
TYPE – FULL 360°
WEB BOOM . . . 146 FT.

MAIN HOIST
200-Ton – By 2 only. 8 part blocks. Each block carries 2,050 ft. of 1 1/2". 6 x 37 I.P.S. wire rope (New).

AUX. HOIST:
25-Ton – By 1 only 4 part block. Block carries 1,110 ft of 1 3/8". 6 x 37 I.P.S. wire rope (New)



1. Diesel Electric Powered with G.M. 8-278A diesel engine (engine just majored) and 300 KW. 230 volt Generators. Both in A-1 first class condition.
2. All New Wire Rope Throughout
3. All sheaves, bushings and sheave pins have been removed, inspected and replaced in Good Condition
4. All Electrical systems and controls have been placed in good operating condition.
5. Large Fuel Tank Capacity
6. 25 ton auxiliary hoist has full 140 ft. of boom travel.
7. Two main hoist drums can be operated independently.

AVAILABLE FOR INSPECTION AND DEMONSTRATION AT OUR PIER – PORTLAND, OREGON

FOUR 30-TON
Container Cranes
70-foot Track Span

NEW 1970-72

Priced at a fraction of today's new replacement cost. Good Condition. Immediately Available. From LASH Ships. Late Model. Manufactured by PACEO. Suitable for Ship, Barge or Land Use. Manufactured to ABS and MARAD requirements.

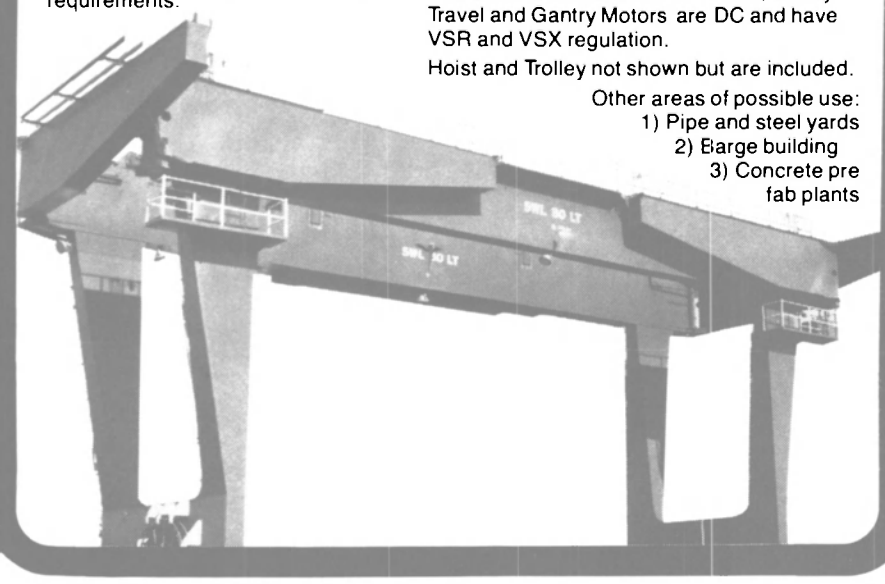
AC Power Input with Cable Reel and 350 feet of 500 MCM Cable.

MG set: 250 HP-AC-170 KW 230 DC.

• 200 HP DC Hoist Motor • 100 HP DC Trolley Motor • 2-40 HP DC Gantry Travel Motors • Trolley Travel 275 F.P.M. • Gantry Travel 100 F.P.M. • Hoist Speed: 30 LT @ 85 F.P.M.; 20 LT @ 100 F.P.M.; Empty Spreader 200 F.P.M. • 32'0" Maximum Outstretch • Hoist, Trolley Travel and Gantry Motors are DC and have VSR and VSX regulation.

Hoist and Trolley not shown but are included.

Other areas of possible use:
1) Pipe and steel yards
2) Barge building
3) Concrete pre fab plants



For additional information, brochures or inspection, contact: Hugh Sturdivant, Sales Manager, or A.D. Canulette, Jr.

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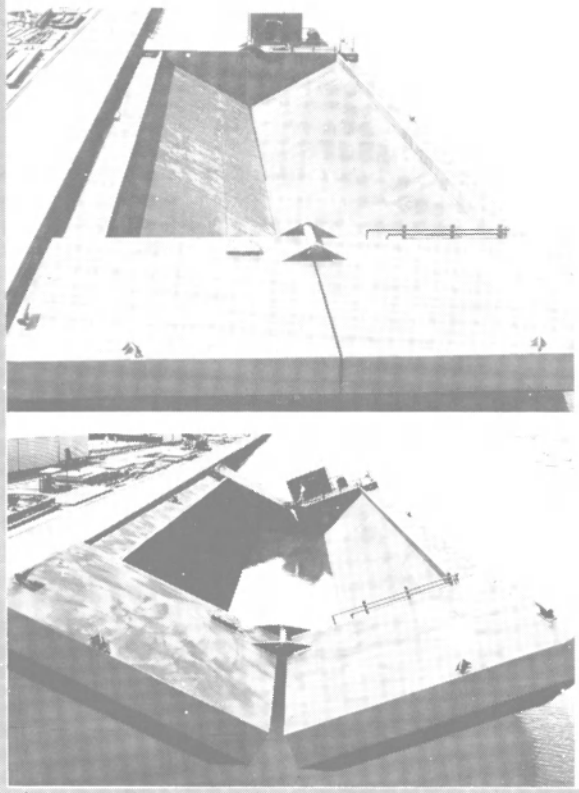
ZIDELL EXPLORATIONS, INC.

3121 S.W. Moody Ave., Portland, Oregon 97201
Phone: (503) 228-8691 • Telex 36-0503 • Cable "Zidell"

For Sale or Charter at Zidell

AVAILABLE FOR IMMEDIATE DELIVERY

Split Type Self Dumping Scows



Built 1979. For sale, long or short term charters

SPECIFICATIONS

ABS loadlined for USCG-approved offport dumping

Length (ML'D)	180'- 0"
Beam (ML'D)	50'- 0"
Depth of Mid-Body (ML'D)	14'- 0"
Hopper Length (ML'D)	128'- 0"
Level Hopper Volume	1421 cu. yd.
DWT @ d = 10.22 ft.	1615 L.T.
Rake Lengths F. & A	26'- 0"
Twin Skegs	
Stern & Fwd. Rake Decks Stepped Up	2'- 0"
Engine GM 671	
Hydraulic Pumps (2) 12 GPM & 75 GPM	
Time To Open (Fully Closed to Fully Open)	6 Min. 5 Sec.
Time To Close	4 Min. 34 Sec.
Hopper Angle Fully Open	53.78°
Fuel Tank Capacity	445 Gal.
Hydraulic Cylinders (2 Fwd. & 2 Aft)	18" Diam. 120" Stroke
Plating	
Side	9/16"
Bottom	5/8"
Hopper	5/8"

American Crane Barge

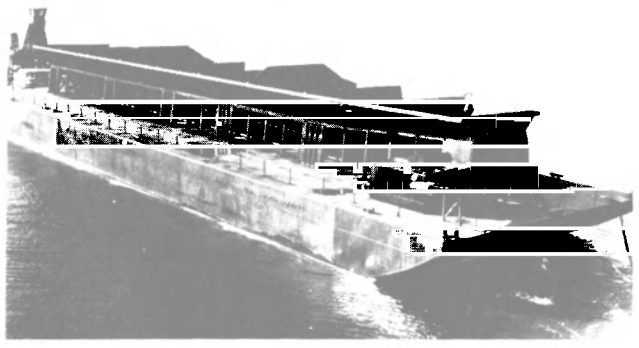
BARGE DATA

Displacement Light	1,200T.
Gross Tonnage	911
Net Tonnage	911
Length	151'- 6"
Beam	60'- 0"
Hull Depth	12'- 0"
Flush Deck Area	6,000 Sq. Ft.
Engine Room Area	412 Sq. Ft.
Office & Eating Area	136 Sq. Ft.
Diesel Fuel Tanks	36,000 Gal
Fresh Water Tanks	36,000 Gal
Bunker "C" Fuel Tanks	12,000 Gal.
Ballast System	None

CRANE DATA

Manufacturer	American Hoist & Derrick Co.
Model & Type	305 Revolver
Capacity	125 T.
Boom (Certified rating with 140' length, 160' available)	
20 part rigging	2,200 ft., 7/8"ϕ – 6 x 36 I.P.S.
4 part standing standing bail	2-186 ft., 1¾"ϕ – 6 x 36 I.P.S.
Main Hoist (Certified rating: 58.5 T. @ 50' to 100', 8 part rigg.)	
20 part rigging	3,250 ft., 1"ϕ – 6 x 36 I.P.S.
Aux. Hoist (Certified rating: 10.0 T. @ 100') 15 T. Capacity	
2 part rigging	635 ft., 7/8"ϕ – 6 x 66 I.P.S.

Self Unloading Aggregate Barge



ZAG-501

Length (O.A.)	248'- 0"
Beam	63'- 0"
Depth	16'- 0"
Displacement Light	1010 S.T.
Draft Light (F.W.)	2'- 7½"
Draft Loaded (F.W.)	11'- 8"
DWT	4000 S.T.
Diesel Electric Set	100 KV
Hopper Volume	2667 cu. yd.

Hopper Unloading Gates: 27-36"x 36" Horiz. sliding gates w/individual hydr. controls.

Main Unloading Conveyer: 48" wide belt, 30 H.P. elect. motor, 250 ft./min. Max. disch. rate – 667 cu. yd./hr.

Transfer Conveyer: 42" wide belt, 10 H.P elect motor, 350 ft./min. off loading location – Stbd. side fwd. at 9 ft. above deck

Hull Plating: Deck, side shell & bott. 9/16"

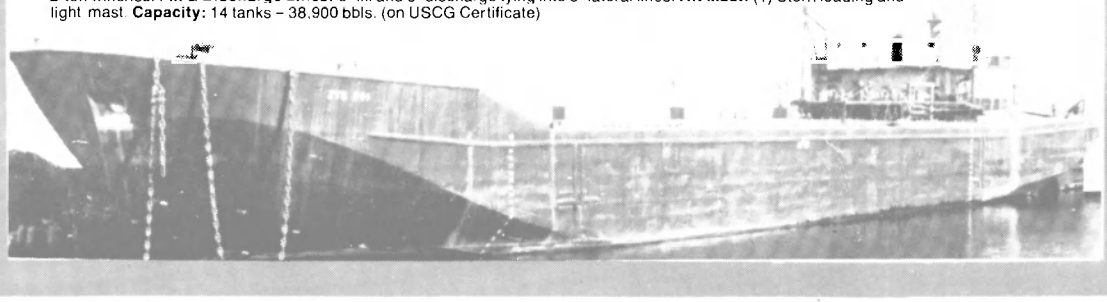
Bulk Petroleum Barge

ZTB-601

Type: • Ocean unmanned service • Grade "B" bulk cargo

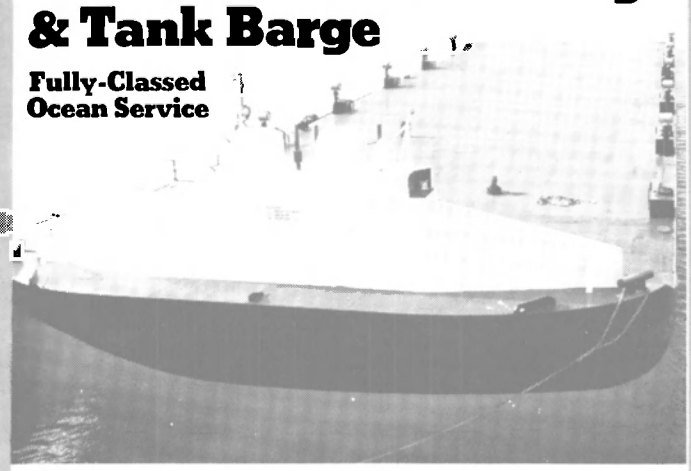
USCG: • Documented with "Consolidated Certificate of Enrollment and License" • Operating – "oceans" • Official No.: 280356 • Net: 2286 • Gross: 2286 • Length: 257.5' • Breadth: 55.1' • Depth: 20.3'

ABS: International Load Line (valid until 6 December 1984) Cert. No. 61-24, 479-2. **Aux. Machinery & Pumps:** (4) Bingham pumps – 8 x 14 VTX – 5 stage – cap. 600-1500 GPM – Type #F – 150 – driven by 4 GMC 6-71 diesels. (1) Diesel generator set – 5 K.W. – Lister – 2 cyl. – air cooled. **Deck Derrick:** (2) Booms & masts – one port and one starboard – rated 2240 lb. lift with two 2-ton winches. **Fill & Discharge Lines:** 6" fill and 6" discharge tying into 8" lateral lines. **Aft Mast:** (1) Stern loading and light mast. **Capacity:** 14 tanks – 38,900 bbls. (on USCG Certificate)



Combination Deck Cargo & Tank Barge

Fully-Classed Ocean Service



ZPC-402 **230' x 60' x 15' Comb. Deck Cargo & Grade 'D' Tank Barge**

Length O.A.	230'- 0"
Beam	60'- 0"
Depth	15'- 6"
Deadrise	6"
Number of Tanks	10
Total Tank Volume @ 95%	24,000 BBL
Cargo Pumps	Two Twin Screw, Deleval IMO GTS-268-066-CBEM
Rating	1500 GPM, 1150 RPM, 100 PSIG Disch. Press., 5000 SSU
Location	Below Deck Pumproom in Fwd. Rake
Diesel Engines	Two Detroit Model 8V-71, 230 HP @ 1800 RPM
Location	Above Deck in Fwd. Deckhouse
Fuel Capacity	1400 Gal
Fill & Disch. Connections	8" ANSI 150# FLG P/S
Heating Coils	2" Sch. 80 Pipe For Shore Steam
Hull Plating	Deck ½", Side Shell 3/8", Bott. 3/8", Shear Strake ½"
Deck Cargo Dwt. at Loadline	3900 S.T.

For additional information or to make an appointment to inspect, call or write:

Thomas A. Sherwood or
Andy Canulette, Jr.

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201 Harrison St. • Hoboken, N.J. 07030

Phones: Hoboken (201) 792-0500

Phones: New York (212) 267-0328

TWX 710-730-5224 CMH HBKN

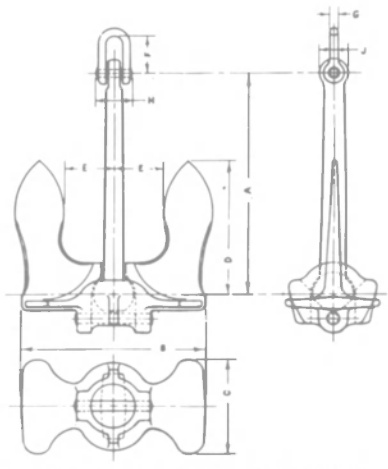
FOR SALE

Gantry Crane
Made by American Hoist & Derrick
25 tons
22 foot track gauge
It has an 80 foot boom
10 foot jib
It is 440 volts
60 cycle
straight electric

Please contact Joe Marra of Therm 1 Power Products at (201) 361-7227

ANCHORS -- CHAIN

DETACHABLE LINKS
PEAR-SHAPED DETACHABLE LINKS



LARGE BALDT-TYPE ANCHORS

NEW — UNUSED LLOYD'S OR ABS CERTIF.

12000 LBS & 8000 LBS

IN STOCK—FOR MOORING—NO CERTIF.

(1) 3000 LBS. DAFORTH
(1) 5300 LBS. BALDT
(1) 14750 LBS. BALDT
(2) 10750 LBS. BALDT

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
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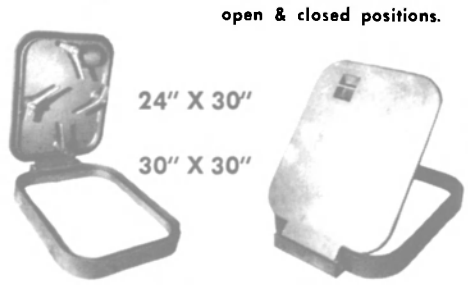
HATCHES

NEW UNUSED FLUSH HATCHES

54' X 77"

14-Dog — operated from top side by T-key, with dogs marked to show open & closed positions.



24" X 30"

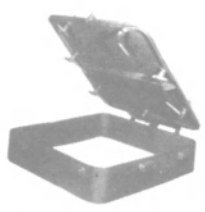
30" X 30"

4 Dogs on underside—topside flush, with T-Key openers.

60" X 42" X 12"
10-DOG

72" X 72" X 12"
16-DOG

36" X 26" 7-DOG TANKER EXPANSION TRUNK



42" X 42" X 9" 7-DOG SPRING LOADED

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LOUIS-ALLIS M.G. SETS

2.5 KW 120 Volt Single Phase 60 Cycle Output
120 Volt D.C. Input — 1800 RPM

2½ KW—115 volts single phase A.C. output. GENERATOR. Type GNA—class 1G— Frame 28A—Form A—1800 RPM—5 KVA—2.5 KW 115 volts AC— 60 cycle —50% PF—43.4 amps. MOTOR: Louis Allis—Type GNA—Class E—Frame 25A—Form A—1800 RPM—115 volts DC—32 amps—shunt wound (with attached Ward-Leonard frequency regulator). Some control panels available.

CAN FURNISH WITH 230 VOLT DC INPUT

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

15½" & 16" CLEAN BRASS 4-DOG MARINE

PORTLIGHTS

15½" CLEAR OPENING
16" CLEAR OPENING

Recently carefully hand removed from ocean vessels. Suitable for re-use on shipyard conversions or for marine ornamental use. Heavy marine standard glass . . . clear or can be furnished frosted for use in special locations.

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WARPING CAPSTAN

8500 Lbs @ 90 FPM or 4250 lbs @ 180 FPM. Below-deck mounted motor—30 HP—440/3/60—with control.

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LIFEBOAT DAVITS

Type 24-40 MK 11. 6000 Lbs/arm or 12,000 lbs/davit set. Will accept manila or wire rope falls. USCG approved.

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SURPLUS

BERGER FAIRLEADS

2 Model 620 — for 1⅝" wire — 20" sheave. Located San Francisco, Ca.

$3959 Each

3 Model 614—for 1¼" wire—14" sheave. Located Panama City, Fla.

$2495 Each

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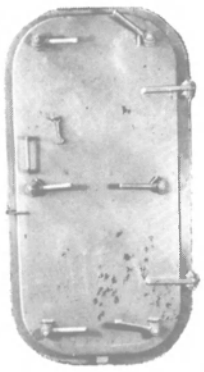
FOR SALE

NEW WATERTIGHT DOORS



Steel Dogs

6-Dog right and left hand hinged doors with frames. Constructed of 1/4" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed. Also available with 8" bronze portlights.

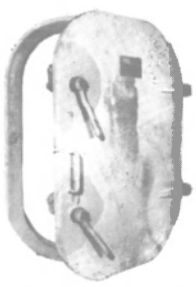
SIZE

26"x48" 26"x66"
26"x60" 30"x60"

EACH DOOR

IMMEDIATE DELIVERY

NEW SMALL STEEL WATERTIGHT DOORS

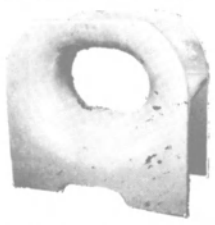


24" X 36"

2-DOGS

5 Right Hand
2 Left Hand

IMMEDIATE DELIVERY



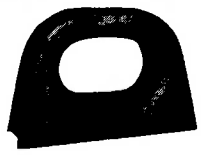
NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)

14" X 10" CLEAR OPENING

With extended legs for welding to deck. 14" Wide on base — length 28" — height 27¼". IMMEDIATE DELIVERY FROM STOCK.

NEW UNUSED 12"X6½" PANAMA CHOCKS FOR SMALL VESSELS



Closed chocks — 12" X 6½" inside opening — 23" overall outside — 8" high — 15" high — 7" radius — weight 110 lbs. IN STOCK.

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HEAVY STEEL DOOR FOR LOADING CARGO THRU SIDE OF SHIP

Complete with heavy frame. Clear opening 72" wide 90" high. Outside frame size 103" high — 86" wide. While under way, door is secured with 18 heavy bolts & steel blocks around frame — 6 heavy bolts & steel blocks in middle.

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WORTHINGTON HIGH PRESSURE AIR COMPRESSORS

10 CFM — 600 lbs. 7½ HP
440/3/60 A.C. Motors

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

INSTRUMENT CABLE WINCH FOR HYDROGRAPHIC SERVICE

Swann Series OH-9642 is a hydraulically operated unit. Drum capacity: 20,000 feet of 1⅜" cable or full drum rating 20,000 lbs at 240 FPM. Fabricated steel frame fitted with automatic spooling device—manual brake—weight 15,000 lbs. Dimensions: 13'1" wide x 10' deep —8'10' high. Drum 3'6" diameter—flange 8'. Powered by 20 HP hydraulic motor. Crossover relief valve protects motor on overload. Type B-30 hydraulic motor mfg by Staffa.

INQUIRE FOR PRINT AND ADDITIONAL INFORMATION

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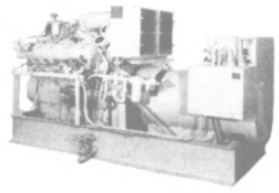
250KW GM 12-V-71 DIESEL GENERATOR SETS AIR START



440/3/60/1800 — with free-standing switchgear. Generators manufactured by Electric Machinery Co. — E.M. Bemac — brushless — synchronized — keel cooled.

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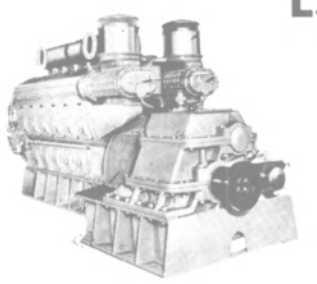
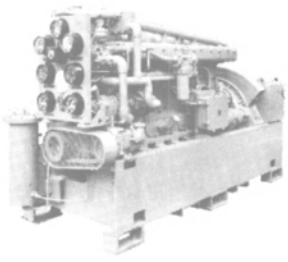
LST MACHINERY



PORT & STARBOARD GM 12-567A 900 HP DIESEL ENGINES

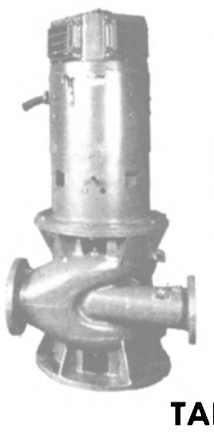
with Falk reverse & reduction gears

ENGINE: GM 12-567A — 8½X10 — V-type — 2-cycle — 747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk AirFlex — reverse & reduction — 2.48:1 forward — 2.52:1 reverse.



100KW GBD-8 DIESEL GENS.

120/240 VDC—417 amps—stab shunt—1200 RPM—Delco generator—Self-excited. ENGINE: Superior GBD-8—8-cyl —5½X7—150 HP—30 volt electric starting. Reconditioned to ABS. Dry wt. 10,000 lbs—DAL 124"—65 11/16" high —42" wide. Hgt necessary to pull piston 68". Fuel consumption 0.620 lbs/hr.

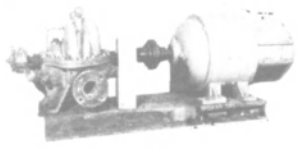


GARDNER-DENVER BALLAST PUMP

Bronze — 1500 GPM — 56' head or 25 bs — 8" suction — 6" discharge. MOTOR: Century 30 HP 230 VDC 110 amps 1750 RPM. 40°T rise — stab. shunt — ballbearing — dripproof. Controls available.

TAILSHAFTS

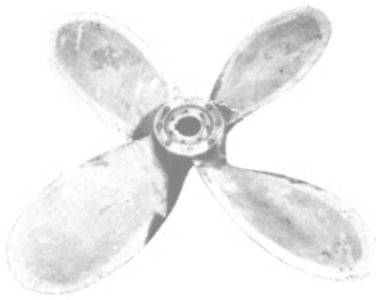
Diameter: 6 1/8" Length: 21' 2 5/8"



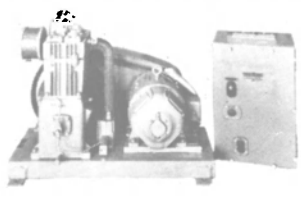
GOULD FIRE & BILGE PUMP

250 GPM & 100 lbs—4" suction—3" discharge—2200 RPM—bronze—manufactured by Gould. Direct connected to 30 HP 230 volt DC Louis-Allis motor.

4-BLADE PROPELLERS BRONZE — PORT & STARBOARD

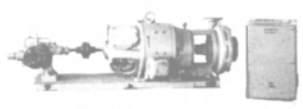


7' Diameter—pitch constant 4.699. Bore tapers from 6 1/8" to 4 53/64". 14½" Taper equal to 1"/foot on diameter. U.S. Navy reconditioned. Average weight 1760 lbs.



CLUTCH TIRE AIR COMPRESSOR

Model 320—4 X 2½ X 3"—10/15 CFM—100/150 PSI—700 RPM. MOTOR: 3 HP—230 volts DC—1750 RPM.



COMBINATION LUBE OIL & SALT WATER COOLING PUMPS

Model 3630—mfg by Goulds—1150 RPM. Rotary lube oil pump one end (35 GPM @ 15 PSI—1½"X1½")—salt water circulating pump other end (35 GPM @ 15 PSI—2" X 1½") G.E. Motor model 5B254A1988—type B —Frame 254—3 HP—230 VDC—11.9 amps—1150 RPM compound—Cont. 40°C temp rise. Ball bearing.

THE BOSTON METALS COMPANY

313 E. Baltimore St. 752-1077 Baltimore, Md. 21202
TWX: 710-234-1637

BUYERS DIRECTORY

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Adrick Cooling Corporation, 30 B. Remington Blvd., Ronkonkoma, NY 11779
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
James D. Nall Co., Inc., 3195 NW 20th Street, Miami, FL 33142
York Division (Borg-Warner Corp.), P.O. Box 1592, York, PA 17405

ANODES—Cathodic Protection
Kaiser Aluminum & Chemical Corp., 300 Lakeside Dr., (Rm 2039KB), Oakland, CA 94643
Wilson Walton International Inc., 66 Hudson Street, Hoboken, NJ 07030

BEARINGS—Rubber, Metallic, Non-Metallic
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

BLASTING—Cleaning—Equipment
Butterworth Systems Inc., 224 Park Ave., Florham Park, NJ 07932
GMMC/Porta-Shotblast, 1112 Davidson Road, Nashville, Tenn. 37205
Goff Corporation, One Pleasent Grove Rd., Seminole, OK 74868

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Clayton Manufacturing Company, 486 No. Temple City Blvd., El Monte, CA 91731
Combustion Engineering, Inc., Windsor, Connecticut 06095
A.B. Murray Company, Inc., P.O. Box 476, Elizabeth, NJ 07207

BRAKES
Goodyear Aerospace (Industrial Brakes Division), Box 477, Berea, KY 40403

BROKERS
B.R.I. Coverage Corporation, 156 Williams Street, New York, NY 10038
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153
Crown Assets Disposal Corp., 300 Notre Dame St., Ville St.-Pierre, Quebec, Canada H8R 3Z6
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006

BUNKERING SERVICE
Belcher Company of New York, Inc., 48-02 54th Avenue, Maspeth, NY 11378
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

CARGO TRANSFER & ACCESS EQUIPMENT
MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

CHOCKING SYSTEMS
Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936

CONTAINERS—Cargo Container Handling
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

CONTROL SYSTEMS—Monitoring
Arnessen Marine Systems, Inc., One Battery Plaza, New York, NY 10004
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Megasystems, Inc., 5909 West 130th Street, Cleveland, OH 44130
Pan American Systems Corporation, P.O. Drawer 400, Belle Chasse, LA 70037
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032

COUPLINGS
Bird-Johnson Co., 110 Norfolk St., Walpole, MA 02081

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Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07087
J. D. Neuhaus, Witten-Heven, Hebezeuge, D 5810 Witten-Heven, West Germany
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

DECK MACHINERY—Cargo Handling Equipment
Appleton Machine Co., Marine Division, 618 S. Oneida St., Appleton, WI 54911
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Navire Cargo Gear (SEA) Pte. Ltd., 9th Floor Orchard Towers, Orchard Road, Singapore 0923

DIESEL ACCESSORIES—CYLINDER LINERS
B & W Marine Service, One State Street Plaza, New York, N.Y. 10004
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, Massachusetts 02360
Golten Marine Company, Inc., 162 Van Brunt Street, Brooklyn, NY 11231
Teledyne Metal Finishers, 1725 East 27th Street, Cleveland, OH 44114
Teledyne Metal Finishers, 3125 Brinkerhoff Road, Kansas City, KS 66115
Twin Disc, Incorporated, Racine, Wis. 53403

ELECTRICAL EQUIPMENT
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Marine Safe Electronics of Canada Ltd., 101 Jardin Dr., Suite 24, Concord, Ontario, Canada L4K 1B6
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Port Electric Supply, 157 Perry Street, N.Y., N.Y. 10014
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

EMULSIFICATION SYSTEMS
Hoffert Manufacturing Company, Inc., 1700 East Church Street, Jacksonville, FL 32202

EQUIPMENT—Marine
ATCO Marine Corp., 603 Dean Street, Brooklyn, NY 11238
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Conhagen/USMP Company, Inc., 4475 South Clinton Ave., South Plainfield, NJ 07080
Consafe Inc., P.O. Box 40339, Houston, TX 77040
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
J. H. Menge & Company, Inc., P. O. Box 23602, New Orleans, La.
John P. Nissen, Jr. Company, Glenside, PA 19038
Rockwell International, Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080
Schwepper Beschlag GmbH, Postfach 101110, 5620 Velbert 1, West Germany
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Unitor Ships Service A/S, Mastemyr, 1410 Kolbotn, Norway
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186
Xarbox, Division of Greene & Kellogg, Inc., 290 Creekside Dr., Tonawanda, NY 14150

EVAPORATORS
Aqua-Chem Inc., P.O. Box 421, Milwaukee, WI 53201
Riley-Beaird, Inc., P.O. Box 1115, Shreveport, La. 71130

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Fibergrate Corporation, P.O. Box 344610, Dallas, TX 75234
Lukens Steel Company, Coatesville, PA 19320
Millard Controlled Metals, 5 Louise Drive, Ivyland, PA 18974

FANS—VENTILATORS—BLOWERS—HEATEXCHANGERS
Coolmar Heatexchangers B.V., P.O. Box 54156 3008 JD Rotterdam, (The Netherlands) Waalhaven Z.Z. 52
Hartzell Propeller Fan Company, 901 S. Downing Street, Piqua, OH 45356
Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

FENDERING SYSTEMS—Dock & Vessel
Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, Va. 22044

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Continental Illinois National Bank, 231 S. LaSalle, Chicago, IL 60693
Greyhound Leasing & Financial Co., Greyhound Tower, Phoenix, AZ 85077
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Warburg Paribas Becker, Inc., 2 First National Plaza, Chicago, Ill. 60670

FURNITURE
Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231
Comfort-Mate, Inc., P.O. Box 43-1572, Miami, FL 33116

GALLEY EQUIPMENT
Kiefer Corporation, 2202 W. Clybourn, Milwaukee, WI 53233

GANGWAYS
Rampmaster Inc., 1226 N.W. 23rd Ave., Fort Lauderdale, Fla. 33311

HATCH & DECK COVERS—Chain Pipe
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Lockstad Company, Inc., R D 2 Burnett Road, Mendham, NJ 07945
MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Julius Mock & Sons, Inc., 20 Vesey St., New York, NY 10017

HULL CLEANING
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Phosmarin Equipment, 21, Boulevard de Paris, 13002 Marseille, France
Sub Enterprises, Inc., P.O. Box 16531, Irvine, CA 92713

HYDRAULICS
Fluid Technology, Inc., 10626 Phillips Highway, Jacksonville, FL 32224
Hydranautics, 6338 Lindmar Drive, Goleta, CA 93017
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

INERT GAS—Generators—Systems
ATCO Marine Corporation, 603 Dean St., Brooklyn, NY 11238
Camar Corporation, P.O. Box 460, Worcester, MA 01613
Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039
Fredriksstad mek. Verksted, N. American Agents, American United Marine Corp., 575 Madison Ave., New York, N.Y. 10022
Peabody Holmes Ltd., 17-27 Garratt Lane, London SW 18 4BY

INSULATION—Cloth, Fiberglas
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

INSURANCE
Adams & Porter, 1819 St. James Place, Houston, Texas 77027
Adams & Porter, 1 World Trade Center, Suite 8433, New York, N.Y. 10048
Alexander & Alexander, Inc., 1185 Ave. of the Americas, New York, N.Y. 10036
B.R.I. Coverage Corporation, 156 Williams St., New York, NY 10038
Midland Insurance Co., 160 Water St., New York, N.Y. 10038
Whitehall Brokerage, Inc., 685 3rd Ave., New York, NY 10017

JOINER—Watertight Doors—Paneling
Masonite Commercial Division, Dover, OH 44622
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

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R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

LIFEBOATS & DAVITS
Schat Davit Corporation, 226 West Park Place, Newark, DE 19711

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
ACR Electronics, Inc., 10-99 3901 North 29th Avenue, Hollywood, FL 33020
Browning Marine, Inc., (Aqua Signal), P.O. Box 806G, St. Charles, IL 60174
Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Phoenix Products Company, 4785 North 27th Street, Milwaukee, WI 53209
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

LNG CONTAINMENT
McDonnell Douglas Astronautics Co., 5301 Bolsa Ave., Huntington Beach, CA 92647

MACHINE TOOLS
Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
A.L. Burbank & Co., Ltd., Marine Thermotest Dept., One World Trade Center, Suite 2811, New York, NY 10048
General Electric Company — Bldg. 2, Rm 216, Schenectady, N.Y. 12345
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080

MOORING SYSTEMS
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., Suite 500, 2341 Jefferson Davis Highway, Arlington, Va. 22202
Agemar, Avenida 3E No. 71-51, Edif. Acuario (Planta Baja) Apartado 1465, Maracaibo, Venezuela
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., Jacksonville, Florida 32211
CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176
CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Columbia-Sentinel Engineers Western, Inc., P.O. Box 21542, Seattle, WA 98111
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Norman N. DeJong & Associates, Inc., 1734 Emerson St., Jacksonville, Fla. 32207
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 82 Beaver Street, New York, NY 10005
Donhaiser Marine, Inc., 11511 Katy Freeway, Houston, TX 77079
Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034
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Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401
Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006
John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110
The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hampton Roads Engineering, Inc., 119 E. Little Creek Rd., Norfolk, VA 23505
J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
Hoffman Maritime Consultants Inc., 9 Glen Head Road, Glen Head, NY 11545
Hydronautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
Lucander Designs, P.O. Box 711, San Perlita, TX 78590
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
MacLear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424
Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
Mechanical Resources Inc., 191 Cambridge Avenue, Jersey City, N.J. 07307
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 33 Bradford Street, Concord, MA 01742
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169
Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104
Robert B. Niederberger, P.E., 507 Evergreen Road, Severna Park, MD 21146
Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104
Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114
Offshore Power Systems, 8000 Arlington Expressway, Jacksonville, FL 32211
Oromar International Enterprises, Inc., P.O. Box 13069, Port Everglades, FL 33316
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pacific Industries Inc., 1440 Canal Street, Suite 1915, New Orleans, LA 70112
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317
Pilotage Consultants, Inc., P.O. Box 3, Atlantic Highlands, NJ 07716
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 657 Mission St., San Francisco, Calif.
Sargent & Herkes, Inc., 611 Gravier St., New Orleans, La. 70130
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316
Seacor Systems Engineering Associates, Corp., P.O. Box 2030, 19 Cherry Hill Industrial Park, Perina Blvd., Cherry Hill, NJ 08003
Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963
Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320
Timsco, 622 Azalea Road, Mobile, AL 36609
Corning Townsend III, 18 Church St., Georgetown, CT 06829
Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10016
Thomas B. Wilson, 920 North Avalon Blvd., Wilmington, CA 90744
Wind Ship Development Corporation, 690 Main Street, Norwell, MA 02061
Wink Incorporated, 8020 Mayo Blvd., New Orleans, LA 70126
XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT
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American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526
Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024
Dantronics Company, P.O. Box 204, Bocca Raton, FL 33432
Debeg Marine, Inc., 10 Manor Parkway, Salem, NH 03079
Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801
Harris Communications, RF Communications Division, 1680 University Avenue, Rochester, NY 14610
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
ITT Decca Marine, U.S. Route 1 & St. Joe Rd., P.O. Box G, Palm Coast, FL 32037
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780
Iotron Corp., 5 Alfred Circle, Bedford, MA 01730
A S Kongsberg Vapenfabrikk, Maritim divisjon, Norcontrol
Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311
North American Philips Communication Corp., 91 Mckee Road, Mahwah, N.J. 07430
RCA Service Co., Building 204-2, Camden, N.J. 08101
Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577

Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Texas Instruments Inc., P.O. Box 226080, M/S 3107, Dallas, TX 75265
Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721

OILS—Marine—Additives
B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095
Ferrous Corporation, P.O. Box 1764, Bellevue, WA 98009
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil Trading Co., 1290 Ave. ol Americas, New York, N.Y. 10019
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017

OIL/WATER SEPARATORS
Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Belzona Molecular Metalife Inc., 224 7th Street, Garden City, NY 11530
"CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
Devoe Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
Jotun-Baltimore Copper Paint Co., 501 Key Highway, Baltimore, MD 21230
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Woolsey Marine Industries, Inc., 1250 Broadway, New York, NY 10001

PETROLEUM SUPPLIES
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PIPE—HOSE—Cargo Transfer, Clamps, Couplings
Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Tioga Pipe & Supply Company, 2450 Wheatsheaf Lane, Philadelphia, PA 19137

PLASTICS—Marine Applications
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Alsthom-Atlantique, 2 quai de Seine, 93203 Saint-Denis, France
Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Burmeister & Wain Diesel, Inc., 50 Broadway, New York, NY 10004
Caterpillar Tractor Company, Engine Division, Peoria, IL 61629
Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511
Combustion Engineering, Inc., Windsor, Connecticut 06095
Electro-Motive Division, General Motors Corp., LaGrange, Ill. 60525
Elliott Company, (Div. of Carrier Corp.), Jeanette, PA 15644
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan
MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Steamco Corporation, 364 Stowe Avenue, Orange Park, FL 32073
Tacoma Boat Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652

PUMPS—Repairs—Drives
Barco Corporation, 16 Bahama Circle, Tampa, FL 36606
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Transamerica Delaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110
Warren Pumps, Inc., Bridges Ave., Warren, Mass. 01083

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014

ROPE—Manila—Nylon—Hawsers—Fibers
American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
Tubbs Cordage Company, Orange, CA 92668

RUDDER ANGLE INDICATORS
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SANITATION DEVICES—Pollution Control
Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford, IL 61111
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184
Microphor, Inc., P.O. Box 490, Willits, CA 95490
Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
Research Products/Blankenship, 2639 Andjon, Dallas, Texas 75220
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

SCAFFOLDING EQUIPMENT—Work Platforms
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055
Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

SHACKLES
West Footscray Engineering Works P/L, 52 Cross Street, West Footscray, Melbourne, Victoria, 30 12. Australia

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT
Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage
American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Levin Metals Corporation, 1310 Canal Blvd., Richmond, CA 94807
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking
A.D.M. (Amsterdam Drydock Mfg.), Maatschappij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland
AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142
Asmar Shipyards Co., Astilleros y Maestranzs de la Armada, Prat 856, Piso 14, Casilla 150-V, Valpariso, Chile, S.A.
Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain
Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S/N, Apdo. Postal 647, Veracruz, Ver., Mexico
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235
Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601
Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Bludworth Bond Shipyard Inc., P.O. Box 5065, Houston, TX 77012
Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
Ira S. Bushey & Sons, Inc., 764 Court Street, Brooklyn, N.Y. 11231
Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048
China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles
Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004
Delattre-Levivier, Tour Fiat, Cedex 16, 92084 Paris La Defense, France
Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa
Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122
FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208
Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553
HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219
Halifax Industries Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, B3K 5H7
Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189
Havre de Grace, Havre de Grace, Md.
Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567
Jackson/Engineering Company, Inc., 2945 Richmond Terrace, Staten Island, NY 10303
Jeffboat, Inc., Jeffersonville, Ind. 47130
Keppel Shipyard Ltd., P.O. Box 2169, 325, Telok Blangah Road, Singapore 4
Levingston Shipbuilding, P.O. Box 968, Orange, TX 77630
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160
MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016
Mangone Shipbuilding Co., 819 South 80th Street, P.O. Box 5446, Houston, TX 77012
Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043
Matton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
Mississippi Marine Towboat Corp., P.O. Box 539, Harbor Front Industrial Pork, Greenville, MS 38701
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
North American Hydraulics, P.O. Box 278, Brampton, Ontario Canada L6V 2L1
O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395, Genoa. Italy 16100
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
Port Houston Marine, Inc., 7220 J.W. Peavy Drive, Houston, TX 77012
Port of Portland, P.O. Box 3529, Portland, OR 97208
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
S.E.B.N., Societa Estercizio Bacini Napoletani, Via Marinella Varco N.6 (80133) Naples, Italy
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
STE Marie Yard & Marine, Inc., 741 East Portage Ave., Sault Ste Marie, MI 49783
Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
Sembawang Shipyard Ltd., Sembawang, P.O. Box 3, Singapore 9175
The Service Machine Group, Inc., P.O. Box 2664, Morgan City, LA 70308
Setenave-Estaleiros Navais De Setubal, P.O. Box 135, Setubal, Portugal
Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Sun Ship Inc., Chester, PA 19013
Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
Tandanor (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
Wiley Manufacturing, a unit of AMCA International Corp., P.O. Box 97, Port Deposit, MD 21904

SHIP STABILIZERS
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SMOKE INDICATORS
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928

STUFFING BOXES
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

SURVEYORS AND CONSULTANTS
Francis B. Crocco. Inc., P.O. Box 1411, San Juan, Puerto Rico 00903
Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038

TANK CLEANING
Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932
Environmental Chemicals, Inc., 487 Division Street, Boonton, NJ 07005
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Salwico, Inc., 77 River St., Hoboken, N.J. 07030

TANK LEVELING INDICATORS
Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032
Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017
Zesco, Inc., 3131 Brian Park, Suite 1095, Houston, TX 77042

TECHNICAL MANUAL PREPARATION
Benhof, Inc., 2468 N. Jerusalem Road, N. Bellmore, NY 11710

TERMINALS—Oil-Transfer
Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614
Delong Corp., 29 Broadway, New York, N.Y. 10006
Transportation Concepts & Techniques Inc., 1020 West Main Street, Charlottsville, VA 22903

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113
Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
Ocean Salvors Company, One World Trade Center, New York, NY 10048
Smit International (Americas) Inc., 17 Battery Place, New York, NY 10004
Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002
Turecamo Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305

TRAINING SERVICES—Simulator
Ship Analytics, Park Circle, Centerport, NY 11721

VALVES AND FITTINGS
American United Marine, 575 Madison Avenue, New York, NY 10022
Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184
Parker-Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
Rockwell International, Flow Control Division, 400 N. Lexington Avenue, Pittsburgh, PA 15208
Stacey Valve Co., 29 Meserole Ave., Brooklyn, N.Y. 11222
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
Winel, Inc., 34655 Mills Road, North Ridgeville, OH 44039

WATER PURIFIERS
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
Halogenic Products Corporation, P.O. Box 27488, Salt Lake City, UT 84127

WINCHES AND FAIRLEADERS
Bloom Inc., Highway 20, West Four Miles, Independence, IA 50644
Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027
Gearmatic Co. Ltd., 7400 132nd Street, Surrey, B.C., Canada
Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134

WINDOWS
Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550

WIRE AND CABLE
Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076
Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

WIRE ROPE—Slings
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

ZINC
Smith & McCrorken, 153 Franklin St., New York, N.Y. 10013

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 24 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors.

President **Reagan** congratulates **W.J. Amoss Jr.**, president of Lykes Bros. Steamship Co., after presenting him with American Legion Merchant Marine Award in White House ceremony.

Jenks Appointed Manager Of J.J. Henry Company's New San Diego Office

Richard R. Hopkins, vice president of the J.J. Henry Company, Inc., has announced the appointment of Capt. **A.L. Jenks**, USN (ret.), to manage the West Coast office the company has opened in San Diego. The new facility will provide engineering services to new construction yards, repair facilities, vessel owners and operators, and industrial firms throughout the West in both the governmental and commercial market segments.

Captain **Jenks** is a 1949 graduate of the U.S. Naval Academy and subsequently was awarded the advanced degree of naval engineer after three years of graduate study at the Massachusetts Institute of Technology. As an engineering specialist he served the next 25 years in billets ashore and afloat.

The J.J. Henry Co. is one of the nation's principal naval architectural and marine engineering firms. In addition to its headquarters in the World Trade Center, New York City, offices are maintained in Moorestown, N.J., Crystal City, Va., Portsmouth, Va., Cohasset, Mass., and area representatives are located in Washington, D.C., Cleveland, and Los Angeles.

Capt. A.L. Jenks

Trans-Marine Asks Title XI On Two Tug/Supply Boats To Cost $5.4 Million Total

Trans-Marine Service, Inc., Houma, La., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 165-foot, diesel-powered tug/supply vessels to be operated in the Gulf of Mexico. Eastern Marine, Inc., Panama City, Fla., is the proposed builder, with deliveries scheduled for November 1981 and May 1982.

The requested guarantee is for $4,050,000 or 75 percent of the $5,400,000 estimated cost of the vessels.

Lykes President W.J. Amoss Receives American Legion Merchant Marine Award

W.J. Amoss Jr., president of Lykes Bros. Steamship Co., Inc., a subsidiary of The LTV Corporation, was presented the American Legion's National Merchant Marine Award by President **Ronald Reagan** in a recent White House ceremony. President **Reagan** said Mr. **Amoss** was being recognized for his work in reopening U.S.-flag shipping with China, for the progress and expansion of the Lykes fleet, and for his advocacy of a strengthened merchant marine.

The award, established in 1956, is sponsored by the American Legion's Robert L. Hague Merchant Marine Industries Post in New York. It is presented only in years when a person, company, or organization is judged to have made an extraordinary contribution to the American merchant marine.

In his remarks accompanying the presentation of the award, President **Reagan** stressed the need for a healthy merchant marine "that can serve as a military auxiliary in time of national emergencies." In accepting the award, Mr. **Amoss** told President **Reagan** that the U.S. maritime industry is "enormously heartened by your interest in our industry. The reluctance of past administrations to define positive maritime objectives invited intergovernmental territorial squabbles that have characterized previous unsuccessful attempts at maritime reform," Mr. **Amoss** said.

Mr. **Amoss**, who has been president of Lykes since 1973 and is a vice president of The LTV Corporation, also serves as chairman of the board of governors of the National Maritime Council, an association representing U.S. shipyards, shipping interests and maritime labor. In 1979, he negotiated an agreement that cleared the way for resumption of U.S.-flag shipping to China following a 30-year interruption. In March 1979, a Lykes ship became the first U.S.-flag vessel to call in China since 1949.

Sperry Gyroscope Awarded $8-Million Navy Contract For Work On Antenna Sets

Sperry Rand Corporation, Sperry Gyroscope Division, Great Neck, N.Y., has been awarded a $8,055,657 firm fixed-price contract to update and convert AN/SPG-55B radar antenna sets from MOD-5 to MOD-8 and MOD-9 under routine overhaul (ROH) FY 81 modernization program. The Naval Sea Systems Command is the contracting activity. (N000-24-81-C-5201)

IME Eastern U.S.A. Branch Hears Paper On Fuel Treatment

At recent Institute of Marine Engineers Branch meeting held at American Bureau of Shipping in New York City are (L to R): **Joseph Tiratto**, assistant honorary secretary of IME's Eastern U.S.A. Branch; **Everett C. Hunt**, Branch chairman; **Mikael Ugander**, manager of Alfa-Laval's Mineral Oil Division, author; and **Alfred E. Deeble**, Branch honorary treasurer.

At a recent meeting of the Eastern U.S.A. Branch of The Institute of Marine Engineers, **Mikael Ugander**, manager, Mineral Oil Division, Alfa-Laval, Inc. presented a paper titled The Treatment and Cleaning of Modern Low-Grade Heavy Fuel Oils. The meeting was held at American Bureau of Shipping headquarters in New York City.

The paper addressed the impact of modern, low-grade heavy fuels on the pretreatment and cleaning system, and presented recommendations concerning the best method to treat these fuels in systems incorporating centrifugal separation.

The primary function of a fuel oil handling system is to remove water and solid impurities. To facilitate the cleaning, it is important that oil is stored, pumped, and heated correctly. Fuel-handling systems incorporating centrifugal separators have over the years demonstrated their ability to effectively treat fuel oils and provide economic benefits to the user. However, due to the decline in the quality of heavy fuels, greater attention must now be paid to the design, installation, and running of fuel treatment systems in order to maintain the

Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Texas Instruments Inc., P.O. Box 226080, M/S 3107, Dallas, TX 75265
Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721

OILS—Marine—Additives
B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095
Ferrous Corporation, P.O. Box 1764, Bellevue, WA 98009
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017

OIL/WATER SEPARATORS
Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Belzona Molecular Metalife Inc., 224 7th Street, Garden City, NY 11530
"CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
Devoe Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
Jotun-Baltimore Copper Paint Co., 501 Key Highway, Baltimore, MD 21230
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 03817
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Woolsey Marine Industries, Inc., 1250 Broadway, New York, NY 10001

PETROLEUM SUPPLIES
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PIPE—HOSE—Cargo Transfer, Clamps, Couplings
Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Tioga Pipe & Supply Company, 2450 Wheatsheaf Lane, Philadelphia, PA 19137

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Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Alsthom-Atlantique, 2 quai de Seine, 93203 Saint-Denis, France
Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Burmeister & Wain Diesel, Inc., 50 Broadway, New York, NY 10004
Caterpillar Tractor Company, Engine Division, Peoria, IL 61629
Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511
Combustion Engineering, Inc., Windsor, Connecticut 06095
Electro-Motive Division, General Motors Corp., LaGrange, Ill. 60525
Elliott Company, (Div. of Carrier Corp.), Jeanette, PA 15644
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan
MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Steamco Corporation, 364 Stowe Avenue, Orange Park, FL 32073
Tacoma Boat Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652

PUMPS—Repairs—Drives
Barco Corporation, 16 Bahama Circle, Tampa, FL 36606
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Transamerica Delaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110
Warren Pumps, Inc., Bridges Ave., Warren, Mass. 01083

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014

ROPE—Manila—Nylon—Hawsers—Fibers
American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
Tubbs Cordage Company, Orange, CA 92668

RUDDER ANGLE INDICATORS
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SANITATION DEVICES—Pollution Control
Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford, IL 61111
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184
Microphor, Inc., P.O. Box 490, Willits, CA 95490
Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
Research Products/Blankenship, 2639 Andjon, Dallas, Texas 75220
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

SCAFFOLDING EQUIPMENT—Work Platforms
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055
Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

SHACKLES
West Footscray Engineering Works P/L, 52 Cross Street, West Footscray, Melbourne, Victoria, 30 12. Australia

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT
Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage
American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Levin Metals Corporation, 1310 Canal Blvd., Richmond, CA 94807
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking
A.D.M. (Amsterdam Drydock Mfg.), Moatschappij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland
AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142
Asmar Shipyards Co., Astilleros y Maestranzs de la Armada, Prat 856, Piso 14, Casilla 150-V, Valpariso, Chile, S.A.
Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain
Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S/N, Apdo. Postal 647, Veracruz, Ver., Mexico
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235
Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601
Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Bludworth Bond Shipyard Inc., P.O. Box 5065, Houston, TX 77012
Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
Ira S. Bushey & Sons, Inc., 764 Court Street, Brooklyn, N.Y. 11231
Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048
China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles
Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004
Delattre-Levivier, Tour Fiat, Cedex 16, 92084 Paris La Defense, France
Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa
Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122
FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208
Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553
HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219
Halifax Industries Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, 83K 5H7
Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189
Havre de Grace, Havre de Grace, Md.
Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567
Jackson/Engineering Company, Inc., 2945 Richmond Terrace, Staten Island, NY 10303
Jeffboat, Inc., Jeffersonville, Ind. 47130
Keppel Shipyard Ltd., P.O. Box 2169, 325, Telok Blangah Road, Singapore 4
Levingston Shipbuilding, P.O. Box 968, Orange, TX 77630
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160
MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016
Mangone Shipbuilding Co., 819 South 80th Street, P.O. Box 5446, Houston, TX 77012
Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043
Matton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
Mississippi Marine Towboat Corp., P.O. Box 539, Harbor Front Industrial Park, Greenville, MS 38701
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
North American Hydraulics, P.O. Box 278, Brampton, Ontario Canada L6V 2L1
O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395, Genoa, Italy 16100
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
Port Houston Marine, Inc., 7220 J.W. Peavy Drive, Houston, TX 77012
Port of Portland, P.O. Box 3529, Portland, OR 97208
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
S.E.B.N., Societa Estercizio Bacini Napoletani, Via Marinella Varco N.6 (80133) Naples, Italy
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
STE Marie Yard & Marine, Inc., 741 East Portage Ave., Sault Ste Marie, MI 49783
Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
Sembawang Shipyard Ltd., Sembawang, P.O. Box 3, Singapore 9175
The Service Machine Group, Inc., P.O. Box 2664, Morgan City, LA 70308
Setenave-Estaleiros Navais De Setubal, P.O. Box 135, Setubal, Portugal
Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Sun Ship Inc., Chester, PA 19013
Swiftships Inc., P.O. Box 1909, Morgan City, LA 70380
Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
Tandanor (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
Wiley Manufacturing, a unit of AMCA International Corp., P.O. Box 97, Port Deposit, MD 21904

SHIP STABILIZERS
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SMOKE INDICATORS
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928

STUFFING BOXES
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

SURVEYORS AND CONSULTANTS
Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903
Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038

TANK CLEANING
Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932
Environmental Chemicals, Inc., 487 Division Street, Boonton, NJ 07005
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Salwico, Inc., 77 River St., Hoboken, N.J. 07030

TANK LEVELING INDICATORS
Transamerica Delaval, Inc., Gem Sensors Div., Spring Lane, Farmington, CT 06032
Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017
Zesco, Inc., 3131 Brian Park, Suite 1095, Houston, TX 77042

TECHNICAL MANUAL PREPARATION
Benhof, Inc., 2468 N. Jerusalem Road, N. Bellmore, NY 11710

TERMINALS—Oil-Transfer
Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614
Delong Corp., 29 Broadway, New York, N.Y. 10006
Transportation Concepts & Techniques Inc., 1020 West Main Street, Charlottsville, VA 22903

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113
Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
Ocean Salvors Company, One World Trade Center, New York, NY 10048
Smit International (Americas) Inc., 17 Battery Place, New York, NY 10004
Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002
Turecamo Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305

TRAINING SERVICES—Simulator
Ship Analytics, Park Circle, Centerport, NY 11721

VALVES AND FITTINGS
American United Marine, 575 Madison Avenue, New York, NY 10022
Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184
Parker-Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
Rockwell International, Flow Control Division, 400 N. Lexington Avenue, Pittsburgh, PA 15208
Stacey Valve Co., 29 Meserole Ave., Brooklyn, N.Y. 11222
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
Winel, Inc., 34655 Mills Road, North Ridgeville, OH 44039

WATER PURIFIERS
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
Halogenic Products Corporation, P.O. Box 27488, Salt Lake City, UT 84127

WINCHES AND FAIRLEADERS
Bloom Inc., Highway 20, West Four Miles, Independence, IA 50644
Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027
Gearmatic Co. Ltd., 7400 132nd Street, Surrey, B.C., Canada
Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134

WINDOWS
Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550

WIRE AND CABLE
Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076
Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

WIRE ROPE—Slings
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

ZINC
Smith & McCrorken, 153 Franklin St., New York, N.Y. 10013

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 24 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors.

President **Reagan** congratulates **W.J. Amoss Jr.**, president of Lykes Bros. Steamship Co., after presenting him with American Legion Merchant Marine Award in White House ceremony.

Jenks Appointed Manager Of J.J. Henry Company's New San Diego Office

Richard R. Hopkins, vice president of the J.J. Henry Company, Inc., has announced the appointment of Capt. **A.L. Jenks**, USN (ret.), to manage the West Coast office the company has opened in San Diego. The new facility will provide engineering services to new construction yards, repair facilities, vessel owners and operators, and industrial firms throughout the West in both the governmental and commercial market segments.

Captain **Jenks** is a 1949 graduate of the U.S. Naval Academy and subsequently was awarded the advanced degree of naval engineer after three years of graduate study at the Massachusetts Institute of Technology. As an engineering specialist he served the next 25 years in billets ashore and afloat.

The J.J. Henry Co. is one of the nation's principal naval architectural and marine engineering firms. In addition to its headquarters in the World Trade Center, New York City, offices are maintained in Moorestown, N.J., Crystal City, Va., Portsmouth, Va., Cohasset, Mass., and area representatives are located in Washington, D.C., Cleveland, and Los Angeles.

Capt. A.L. Jenks

Trans-Marine Asks Title XI On Two Tug/Supply Boats To Cost $5.4 Million Total

Trans-Marine Service, Inc., Houma, La., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 165-foot, diesel-powered tug/supply vessels to be operated in the Gulf of Mexico. Eastern Marine, Inc., Panama City, Fla., is the proposed builder, with deliveries scheduled for November 1981 and May 1982.

The requested guarantee is for $4,050,000 or 75 percent of the $5,400,000 estimated cost of the vessels.

Lykes President W.J. Amoss Receives American Legion Merchant Marine Award

W.J. Amoss Jr., president of Lykes Bros. Steamship Co., Inc., a subsidiary of The LTV Corporation, was presented the American Legion's National Merchant Marine Award by President **Ronald Reagan** in a recent White House ceremony. President **Reagan** said Mr. **Amoss** was being recognized for his work in reopening U.S.-flag shipping with China, for the progress and expansion of the Lykes fleet, and for his advocacy of a strengthened merchant marine.

The award, established in 1956, is sponsored by the American Legion's Robert L. Hague Merchant Marine Industries Post in New York. It is presented only in years when a person, company, or organization is judged to have made an extraordinary contribution to the American merchant marine.

In his remarks accompanying the presentation of the award, President **Reagan** stressed the need for a healthy merchant marine "that can serve as a military auxiliary in time of national emergencies." In accepting the award, Mr. **Amoss** told President **Reagan** that the U.S. maritime industry is "enormously heartened by your interest in our industry. The reluctance of past administrations to define positive maritime objectives invited intergovernmental territorial squabbles that have characterized previous unsuccessful attempts at maritime reform," Mr. **Amoss** said.

Mr. **Amoss**, who has been president of Lykes since 1973 and is a vice president of The LTV Corporation, also serves as chairman of the board of governors of the National Maritime Council, an association representing U.S. shipyards, shipping interests and maritime labor. In 1979, he negotiated an agreement that cleared the way for resumption of U.S.-flag shipping to China following a 30-year interruption. In March 1979, a Lykes ship became the first U.S.-flag vessel to call in China since 1949.

Sperry Gyroscope Awarded $8-Million Navy Contract For Work On Antenna Sets

Sperry Rand Corporation, Sperry Gyroscope Division, Great Neck, N.Y., has been awarded a $8,055,657 firm fixed-price contract to update and convert AN/SPG-55B radar antenna sets from MOD-5 to MOD-8 and MOD-9 under routine overhaul (ROH) FY 81 modernization program. The Naval Sea Systems Command is the contracting activity. (N000-24-81-C-5201)

IME Eastern U.S.A. Branch Hears Paper On Fuel Treatment

At recent Institute of Marine Engineers Branch meeting held at American Bureau of Shipping in New York City are (L to R): **Joseph Tiratto**, assistant honorary secretary of IME's Eastern U.S.A. Branch; **Everett C. Hunt**, Branch chairman; **Mikael Ugander**, manager of Alfa-Laval's Mineral Oil Division, author; and **Alfred E. Deeble**, Branch honorary treasurer.

At a recent meeting of the Eastern U.S.A. Branch of The Institute of Marine Engineers, **Mikael Ugander**, manager, Mineral Oil Division, Alfa-Laval, Inc. presented a paper titled The Treatment and Cleaning of Modern Low-Grade Heavy Fuel Oils. The meeting was held at American Bureau of Shipping headquarters in New York City.

The paper addressed the impact of modern, low-grade heavy fuels on the pretreatment and cleaning system, and presented recommendations concerning the best method to treat these fuels in systems incorporating centrifugal separation.

The primary function of a fuel oil handling system is to remove water and solid impurities. To facilitate the cleaning, it is important that oil is stored, pumped, and heated correctly. Fuel-handling systems incorporating centrifugal separators have over the years demonstrated their ability to effectively treat fuel oils and provide economic benefits to the user. However, due to the decline in the quality of heavy fuels, greater attention must now be paid to the design, installation, and running of fuel treatment systems in order to maintain the best possible cleaning results.

WHEELER

Royal Schelde Scheldepoort shiprepairers ADLLAND

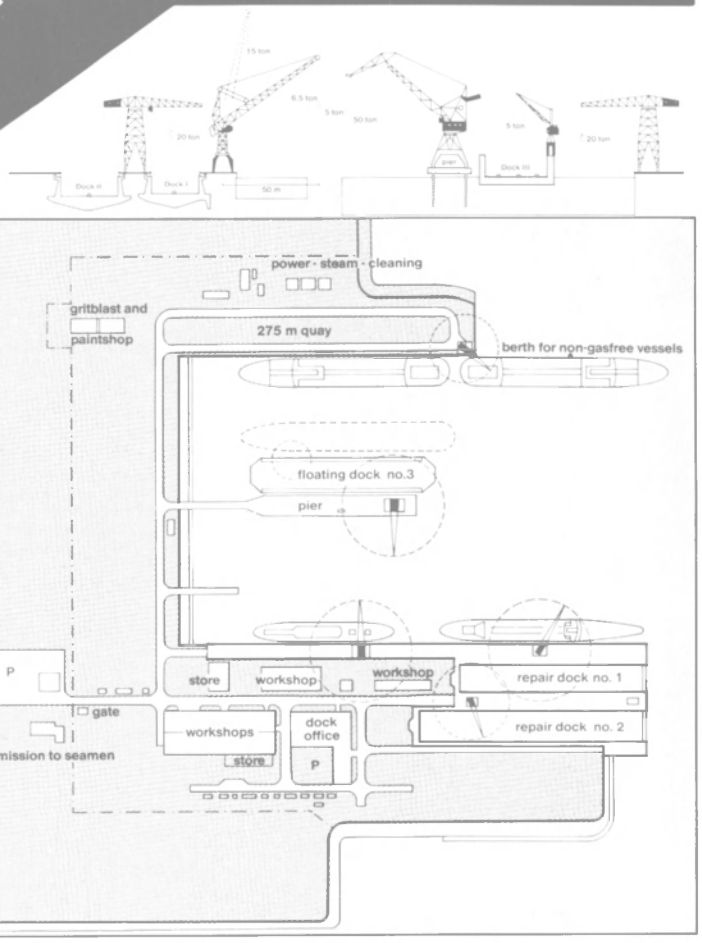
The yard uses the newest gritblasting and coating equipment, including a high pressure freshwaterjet installation for hull cleaning of ships in drydock.

Docks at Scheldepoort

Dock No. 1
graving dock, for ships up to 25.000 dwt.
length 175,00 m
breadth 25,50 m
depth 7,80 m

Dock No. 2
graving dock, for ships up to 45.000 dwt.
length 217,00 m
breadth 30,00 m
depth 8,70 m

Dock No. 3
floating dock, for ships up to 25.000 dwt
lifting capacity 10.000 tons
length 177,80 m
breadth 27,00 m
depth 7,00 m



Repair yard facilities
At least two cranes are available for each dock. Maximum load: 40 tons. Heavier loads? A floating crane can be arranged at short notice.
The yard has three repair quays, 440 m, 165 m and 275 m. Draft of ship: practically unrestricted.
Scheldepoort has its own workshops with welding floor and machining equipment.
For more extensive jobs the yard has the facilities of Royal Schelde's engineering works and shipyards at its disposal.

EXCLUSIVE AGENTS

WESLEY D. WHEELER ASSOCIATES, LTD.
INTERNATIONAL MARITIME CONSULTANTS
104 EAST 40 STREET, SUITE 207
NEW YORK, N.Y. 10016
CABLES WESWHEELER
126476 WHEELER NYK
ITT WDN 426040
RCA [illegible] NDW
WUI WDW 666627
212 867 4760

DIPLOMATE IN NAVAL ARCHITECTURE AND MARINE ENGINEERING

B.V. Koninklijke Maatschappij 'De Schelde'
Vlissingen Netherlands
Telephone: (+31 1184) 83000
Telex: 37825
P.O. Box 16 - 4380 AA
Cables: Schelde Vlissingen

Write **413** on Reader Service Card

Simrad designs and builds every piece of marine electronic equipment to meet the most stringent legal requirements not only of the U.S. Government but all over the world. Important? Yes. But not as important as the everyday safety of your boat and your crew. So Simrad goes beyond legal requirements to make sure that your electronics are accurate, reliable, tough and easy-to-use. Quality that you can depend on, and economical so that you can afford to have all the protection that you and your crew deserve.

Simrad can help you pass IMCO inspection...and much more!

Simrad Loran C's are designed and manufactured to meet or exceed the U.S. Coast Guard endorsed RTCM Minimum Performance Standard (MPS).

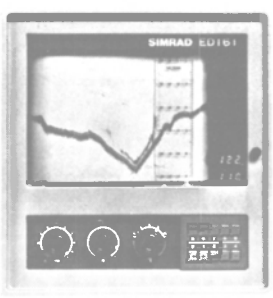
TL-856 Loran C Navigator automatically computes and displays TD's, Lat/Long, course, ground speed, time and distance to any of ten waypoints, as well as cross-track error. It can acquire and track all Loran C masters and secondaries worldwide. Four tunable and two preset notch filters for professional performance even in high interference areas. *TL-856 makes it all simple.*

TL-838 Loran C Receiver simultaneously displays two lines of position from automatically acquired and tracked masters and all available Loran C secondaries. TL-838 has four tunable and two preset notch filters for outstanding performance, worldwide. It incorporates a three point memory, and *very fast acquisition and settling.*

Loran C Coordinate Converter Model TC-28A adds total navigation functions to most Simrad Loran C Receivers. Converts TD's to Lat/Long, memorizes up to ten waypoints and calls up course and distance to any of them. Computes and displays on command time to destination and cross-track error. Installs directly on TL-838 or separately with other Simrad models. *Makes them all navigators.*

2182 KHz Watch Alarm Receiver. Simrad's new, compact, FCC approved Watch Alarm Receiver, RW 105, fulfills all legal requirements of the new IMCO/SOLAS Regulations. The RW 105 also meets the specifications for most other maritime regulatory agencies. It can be set to receive all transmissions on the 2182 KHz distress frequency or automatically mute all but distress signals preceded by the two-tone alarm. An internal digital clock lifts the mute during radio silence periods. Connection for optional tape recorder or remote speaker, and built-in test generator are standard. *Easily fits into limited space.*

Two IMCO approved automatic direction finders, the TD-A202B and the TD-C328HATS (shown), are now offered by Simrad. The TD-A202B has frequency ranges of 200-580 KHz beacon band and 1.5-2.8 MHz marine band. The TD-C328HATS has a range of 200 KHz to 13.5 MHz. Both are highly sensitive superheterodyne receivers. *They lock in fast.*



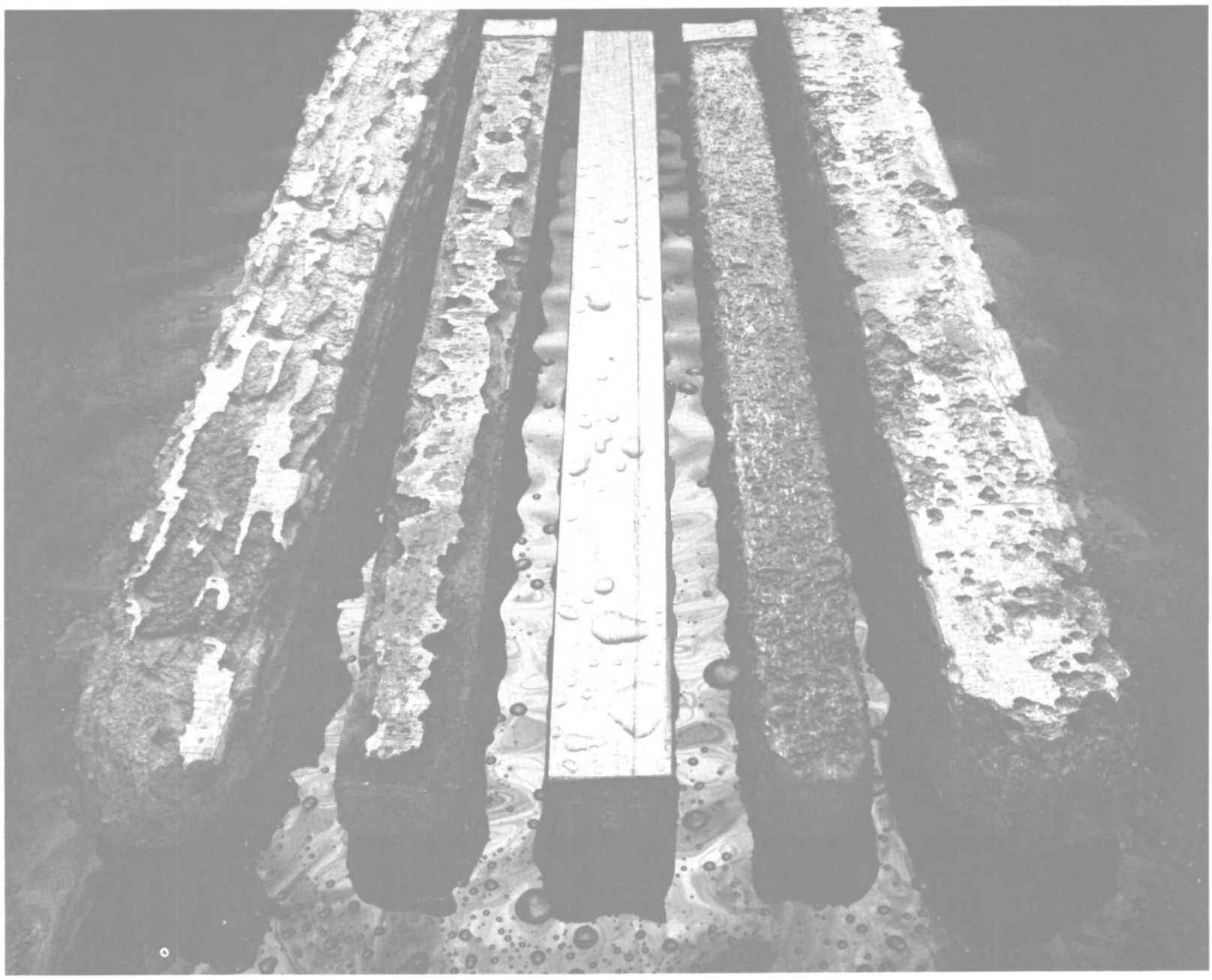
New Digital Recording Sounders. Simrad offers two economical navigation recording echosounders that meet IMCO recommendations for merchant vessels. In addition to showing a well defined bottom on recording paper, the systems have independent digital depth indicators and depth alarms. The Simrad ED-161 has four recording ranges from 0-25 to 0-550 fathoms. For navigating in shallower waters, the 200 KHz ED-162 has four ranges from 0-30 feet to 0-250 fathoms. The optional IR-201 Remote Digital Analog Indicator displays depth in feet, meters and fathoms. An optional transducer selector with alarm (TS-101) allows use of up to four transducers. Due to Simrad's special engineering, *some vessels can be retrofitted from inside the hull without having to drydock.* Contact Simrad for details.

SIMRAD

A trusted name at sea.

Simrad Inc., One Labriola Court,
Armonk, NY 10504 (914) 273-9410

Write 335 on Reader Service Card



Our aluminum marine anodes are designed to wear out.

All marine anodes are designed to wear out. But our aluminum anode performance for protection of steel offshore platforms can be predicted with a high degree of success. Many years of intensive R&D led to the introduction of our two new maximum-performance alloys and to the construction of our modern 10,000,000-pound/year anode manufacturing facility.

Take your choice. KA90, Al-Zn-Sn type anode (without mercury), tested to have an average current output of 1176 amp-hours/pound. Voltages range from 1.07v to 1.15v. Or, KA95, Al-Zn-Hg type (with mercury), tested to have an average current output of 1285 amp-hours/pound and a voltage of over 1.05v.

Both KA90 and KA95 aluminum marine anodes for corrosion protection are available in sizes up to 1100 pounds. Every heat must qualify for acceptance by going through our Q-7 seven-point quality control program.

Ask for our 20-page brochure which includes an anode-selection nomograph and other important design data. Write Kaiser Chemicals, 300 Lakeside Dr., Oakland, CA, 94643. Attn.: W.A. Sorensen KB 2039. Or call (415) 271-5580.

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